

COMPUTERWORLD

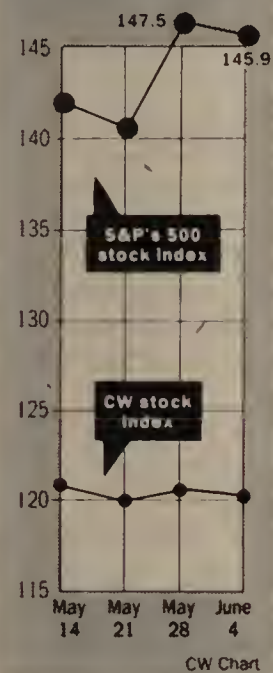
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JUNE 9, 1986

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Managing MIS staff incentive programs requires finesse to avoid alienating those not rewarded. **Page 103.**

User concerns over IBM's mixed signals on the future of System/36s and 38s have been noted and are being addressed, a senior IBM executive says. **Page 16.**

Distributed data base management is offered to large users of the Ingres DBMS from Relational Technology. **Page 31.**

Ashton-Tate axes two Multimate packages and freezes efforts to port word processing to larger systems. **Page 25.**

The long-awaited automatic loader for IBM's 3480 cartridge tape system arrives. **Page 8.**

Bridging a gap between IBM's DOS/VSE and VM operating systems, Applied Data Research unveils a new version of Librarian. **Page 4.**

Digital Research rolls out an operating system that can concurrently run MS-DOS and CP/M applications and take advantage of expanded memory. **Page 15.**

Sources say John Thibault, Wang Laboratories' vice-president of corporate quality, will be named CEO of Intecom, Inc., the Allen, Texas, PBX manufacturer being acquired by Wang. A Wang spokesman would only confirm that Thibault will join a transition team managing the acquisition, but an Intecom spokesman said a Wang employee will be named as CEO.

Intecom President and Chief Operating Officer Erik Ringjob will remain in his positions, while current Chairman and CEO C. Michael Bowen will become a consultant to the Wang subsidiary.

IBM Japan's decision to slash prices on IBM's two 3090 series processors and peripherals by up to 20% is expected to spark a price war among Japanese mainframes. **See NEWS page 4**

Tool targets CICS crashes

Users: Storage violation flaw causes downtime loss

By Charles Babcock

FORT LEE, N.J. — A long-standing storage glitch in IBM's popular data communications monitor, CICS, has been addressed by a product from On-Line Software International, Inc.

Users say the "infamous storage violation" in CICS causes repeated system crashes and has been inherent in the product since its introduction in 1968.

While welcoming Stabilize/CICS, introduced last week by On-Line Software, beta-test site users say they have not had enough experience with it to know for certain that a solution to the CICS bug

See **TOOL** page 4

Windows opens on Wall Street

By Douglas Barney

NEW YORK — Several leading financial and investment firms last week disclosed plans to use the Windows operating environment from Microsoft Corp. as the user interface for the financial trading systems they will use in-house or sell commercially.

The announcements were presented by Microsoft as a key endorsement by the financial community — a target market for the product — and came during a company briefing at which several enhancements to Windows also were unveiled.

Although some software developers

See **WINDOWS** page 2

Honeywell ties OA, DP, other systems

By James Connolly

NEW YORK — A strategy of linking office systems with manufacturing, control and mainframe DP systems was at the root of Honeywell, Inc.'s introduction last week of an integrated office software system, communications products and a 32-bit minicomputer.

The announcements focused on Honeywell's need to support communications among competing systems produced by diverse vendors, to make office systems work with manufacturing and control systems and to let users access mainframe data as well as exchange documents.

Honeywell officials acknowledged that it is common for large-systems users to operate three or more different vendors' mainframes and minicomputers.

"Because we are already a leader in integrating the functions of all kinds of buildings, we believe we have an edge in integrating the office systems that our customers need to run their businesses, regardless of whose equipment is already in place," said Honeywell Chairman Edson W. Spencer at the New York product introduction.

Honeywell officials said the offerings are intended to tie together office, data center, factory floor and building controls systems through both IBM's Systems Network Architecture and the International Standards Organization's Open Systems Interconnect model, as well as through private branch exchanges.

But the minicomputer hardware and software announced last week also will provide the building blocks for future product developments in the buildings controls and manufacturing markets.

In addition, Honeywell marketing officials said their sales force has been re-

See **HONEYWELL** page 6

CW EXCLUSIVE

User views: Survey finds mainframe satisfaction up, memory size growing

By James Connolly

DELRAN, N.J. — In the face of industry-wide talk of a mainframe market slump, the number of large systems installed in DP shops continues to grow, and user satisfaction levels remain steady.

The levels of growth and user satisfaction — with Burroughs Corp. users voicing the greatest overall satisfaction — were among the findings of Datapro Research Corp.'s annual survey of mainframe users.

Officials at Datapro, based in Delran, noted that despite minor movement in

the scores for most vendors, the patterns of satisfaction were consistent with the results of the previous two years.

Datapro reported a response rate of 24% for the mailing of 5,342 questionnaires to users.

The study showed main memory capacities increasing, with 40% of the users having at least 16M bytes of memory, 26% using 16M to 32M bytes and 5% using more than 64M bytes. Just two years ago, the majority of the users reported between 2M and 8M bytes of memory. Disk storage also increased,

See **SURVEY** page 45



NCC due next week

Computerworld previews the 1986 National Computer Conference, the industry's largest end-user show, set to kick off next Monday in Las Vegas. Featured: the state of the industry, show schedules, listing of exhibitors' wares.

NEWS

No service problems reported in first week of AT&T strike

Prolonged action may cause equipment delays

By Mitch Betts

WASHINGTON, D.C. — Data communications managers reported no network service problems during the first week of the Communications Workers of America (CWA) strike against AT&T, but observers said a prolonged strike may cause delays in the installation of equipment and new networks.

August H. Blegen, executive director of the Association of Data Communications Users in Bloomington, Minn., said he has heard no reports of service problems from members so far. However, he said the strike is likely to delay the planning phase of big networks as AT&T managers are diverted to other tasks.

Blegen asserted that the strike may prompt managers of large data networks to seek out other vendors. "I think they're going to look at alternative sources of supply, because no one knows how long this might go

on," he said.

AT&T is now meeting its commitments to large business customers for installations of equipment and networks, spokeswoman Edith Herman said last week.

Noting that a 1983 strike caused a large backlog in private-line installations, Herman said, "We're keeping an eye on that. Down the road that could be a problem, but we've seen no major problems yet."

Talks to settle the strike recessed last week with little or no progress reported. The strike by 155,000 members of the CWA union began June 1, with the expiration of the union's contract with AT&T.

The union has rejected AT&T's proposal of an 8% wage increase over three years.

The CWA objects to AT&T's demand for an end to cost-of-living wage adjustments, limits on incentive pay for factory workers and certain job reclassifications.

AT&T management argued that it needs the contract revisions to be competitive with its mainly non-union rivals.

Windows opens on Wall Street

From page 1

have criticized Microsoft as being heavy handed in its promotion of the product, corporate developers last week said it met their needs.

"Windows gives us a tremendous opportunity to take a tool-kit approach," said Gary Handler, project manager for briefing participant Merrill Lynch, Pierce, Fenner and Smith, Inc. "We can build a system of cooperating modules that are coordinated with hot links [real-time data transfer] and build outward from that," said Handler, underscoring Windows' flexibility in enhancing applications.

Merrill Lynch's Windows-based program, called the Merrill Lynch Municipal Trading System, will be used internally by the firm's Capital Markets trading desks throughout the country. The system is built around an IBM Personal Computer AT and exchanges data with larger systems, including an IBM 3090 and an NCR Corp. Towers.

"We wanted to establish local and centralized data bases, so we can have an overall management view from the central office here in New York but also allow the trading managers and the traders to really understand where their markets are going at any point in time," Handler said.

Reuters Holdings PLC showed its Advanced Reuters Terminal. "The system receives live stock market data and can do key word searches of news wire stories simultaneously. It is a very live system," said Ronald A. Owens, client systems manager for Reuters Holdings. The system will be marketed to traders and will be available July 1.

Applications by Midland Bank PLC, Investment Data Corp. and Neu-

ron Data were also demonstrated.

Most of the systems shown at the briefing allow PCs to act as financial workstations, accessing data from larger systems, such as Digital Equipment Corp.'s VAX line of minicomputers and IBM mainframes, and continuously updating information on the workstation screen. "Financial applications very commonly need real-time data," said William H. Gates, chairman of Microsoft.

Microsoft also announced extensions of Windows, including the Dynamic Data Exchange (DDE) protocol. This will allow applications to exchange data in either one-time transfers or through an established "ongoing dialogue," without having to first capture the data in a clipboard approach.

"The idea is that data can move between applications without cutting and pasting," Gates said, referring to the feature as a "hot link."

Developers interested in taking advantage of DDE face only "small changes in application code," said Paul J. Davis, a member of the marketing group for Microsoft. Prior to DDE, developers reportedly had to create their own private format for a "hot-link" type of data exchange.

Additionally, Microsoft introduced the Rich Text Format (RTF), a specification that allows applications to exchange text while maintaining their particular fonts, colors, sizes and styles. RTF is of prime importance for desktop publishing applications and for the transfer of reports and text enhanced by full justification, boldface type and italics, Trower said.

Also last week, Digital Communications Associates, Inc. (DCA) announced that its Irma micro-to-mainframe communications software will be rewritten to allow the Irma 3278 terminal emulator to run as a Windows application. The first DCA products will be available later this year.

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NCC PREVIEW

The 1986 National Computer Conference, kicking off next Monday in Las Vegas, promises to focus on networking, DP strategies and other user concerns. *Computerworld* previews conference sessions, seminars, events and industry players/ **49**

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NEWS

Librarian shares VSE, VM source code

Users say ADR manager bridges mainframe gap

By Charles Babcock

PRINCETON, N.J. — Formerly incompatible source code may now be shared across IBM DOS/VSE and VM operating systems, according to early users of a release of Librarian announced last week by Applied Data Research, Inc. (ADR).

Librarian is ADR's source code management facility, with 6,000 copies sold since it was issued in 1969. With Release 3.5, Librarian bridges one of the few remaining gaps between IBM mainframe operating systems.

Release 3.5 may prove particularly useful in shops in which VM is used as the development environment but VSE still is used for production, the users noted.

At a Midwest hospital, where that combination is in use, the VM system manager noted, "I could find no other tool that would provide access to source code in both operating systems."

Earlier releases of Librarian provided what ADR now refers to as Cross-Operating System Sharing between OS, VSE and MVS operating systems. With the latest release, a Librarian master file containing a source code program may be simultaneously updated from any of the IBM mainframe operating system environments, according to Richard Parente, Librarian product manager.

At a site that is making the conversion from VSE to MVS, with a VM development environment, Librarian would allow programmers to continue to update VSE applications still in use, even though they would soon be migrated into the MVS environment, Parente said.

Release 3.5 contains several other new components. One is the Change Control Facility, which creates strict controls over how source code is modified.

"The problem we've run into [without controls] is that more than one programmer checks out the same source code at the same time," said David B. Richards, storage administrator at United Pacific Insurance Co. in Federal Way, Washington.

"Each puts it back into production at separate times, with the work of the one nullifying the work of the other," he said.

Under the Change Control Facility, only one programmer may work on a source program at a time.

When combined with Librarian's archiving facility, the new capability allows a data processing manager to both control changes to source code and keep a chronological record of changes to it. The archiving facility not only can establish original and latest versions of the programs but also can reconstruct any version in-between. A total of 255 copies may be stored, Parente said.

The Change Control Facility is currently available for the ADR/Roscoe development environment used under the MVS operating system.

Release 3.5 also includes a Comparator for comparing two source code programs and reporting their differences.

Librarian is available immediately for \$19,000 in the DOS version and \$29,400 under OS environments. VM/CMS support is available for an additional \$9,500.

Tool targets CICS crashes

From page 1

has been found.

The storage violation allows a CICS programmer to exceed memory allocation without being warned, resulting in an overlay of whatever application or CICS control code is nearby on the disk, said Donald Andrews, systems programmer at St. Mary's Methodist Hospital in Rochester, Minn. When the code is affected, the system crashes the next time the code is invoked.

The remedy after a crash entails a tedious search of a system dump for corrupted code and for the transaction that called it, according to an assistant treasurer who manages CICS for securities processing at a New York bank.

The bank uses MVS/CICS as its data communications system to connect applications used by stocks and

bonds traders at terminals, its IBM 3090 mainframe and outside information and trading services.

When the bank's system crashes, "it takes an average of 45 minutes to get it back up again," said the assistant treasurer, who requested anonymity.

The bank attempted to get around CICS crashes by training programmers to stay within their memory allocations. The crashes, which used to occur at least once a week, still occur intermittently, he said.

"You ask for so much storage, and CICS gives you the address of where it starts. But nothing prevents you from going beyond that limit, especially when you're using macros," St. Mary's Andrews said.

The On-Line Software product that addresses the problem is aimed primarily at CICS production environments in which system operators have been forced to waive automatic crashes that are induced by the operating system when an overlay is about to occur, according to Rick Holtmeier, executive vice-president

of On-Line Software.

Stabilize/CICS can detect the CICS signal to the operating system that calls for an automatic crash, and it can activate substitute procedures, Holtmeier claimed.

Another cause of CICS crashes is an application that goes into a loop. Because it is an interactive, on-line system, CICS can be frozen by a single looping application, with a system crash being the only way out, he said.

With Stabilize/CICS, applications are constantly monitored for loops, and when one is detected, that application is crashed, and standard CICS recovery routines are invoked, he said.

Stabilize/CICS is available for all MVS environments for a one-year, \$12,000 license or a three-year, \$36,000 license, company officials said.

TOP OF THE NEWS

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frame vendors and possibly have repercussions in the U.S. market. The reductions are interpreted as IBM's response to user complaints that the 3090 prices had become unacceptable because of the increased value of the yen against the U.S. dollar. The price of IBM's 3090 Model 200, which went on sale last September for \$8.08 million, was cut 9%. The price of peripherals such as the 3380 D/E disk storage unit and 3380 21/23 disk controller was reduced 11%. Deliveries of the 3090 Model 400 are set to begin late this year.

Former DEC and Encore Computer Corp. executive C. Gordon Bell has officially left the corporate world. Effective July 1, he will head the National Science Foundation's directorate for research in computer and information science and engineering.

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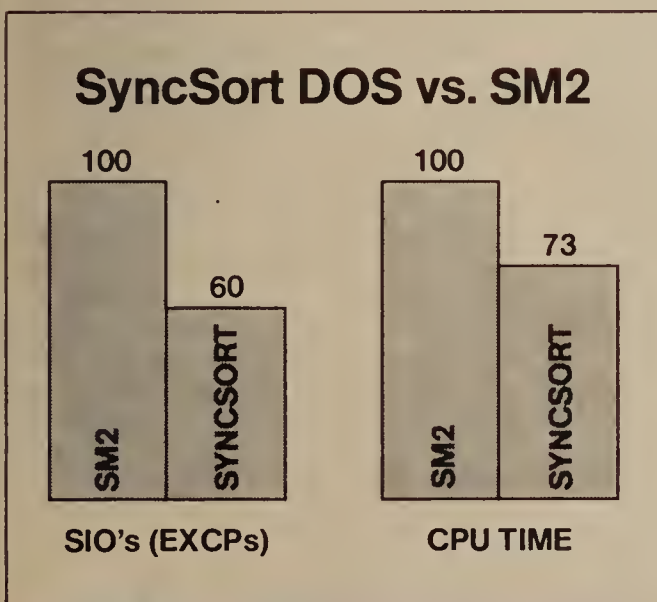
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NEWS

CW CHART

Honeywell ties OA, DP, others

From page 1

structured and expanded to support collaborative sales approaches, under which they hope to coordinate offerings to address each customer's office, DP and building and manufacturing systems requirements.

The announcements include the following:

- The first two members of the DPS 6 Plus line of 32-bit virtual memory mini (see story below).

- The Office Network Exchange (ONE) Plus integrated office software system, which was designed along the lines of Digital Equipment Corp.'s All-In-1 and Data General Corp.'s CEO, with support for non-Honeywell systems, multimedia document creation and intersystem data base access.

- The Honeywell Virtual System (HVS) 6 Plus operating system, which Honeywell said will allow programs written for earlier DPS 6 systems to run on the DPS 6 Plus processors.

- Three applications packages for the health care industry.

Communications products

Communications products announced at the same time included enhancements to the Honeywell-to-SNA network gateway, OSI session layer and transport layer products for small computers, a local-area network for personal computers, expanded Ethernet capabilities and a Digital Multiplexed Interface (DMI) link between Honeywell's small computers and PBXs.

The DMI voice and data link, which will be available for AT&T's System 75 and 85 PBXs later this

year and for Honeywell PBXs in 1987, is a step toward implementing an integrated digital systems network, according to Honeywell spokesmen.

The SNA gateway enhancement, Release 4.0, reportedly allows IBM 3270 terminal users interactive access to applications on Honeywell DPS 6 and DPS 8 systems. In addition, Onelink, an enhanced IBM Distributed Office Support Systems connection, will be available in early 1987.

The LAN, to be available in July, is said to support direct Ethernet attachments for Honeywell Personal Computers, IBM Personal Computers and other IBM-compatible PCs through a \$683 PC-LAN card.

Honeywell officials said all of the announcements are targeted at the company's installed base of mainframe users and its 40,000 DPS 6 users as well as new accounts, particularly small businesses running other vendors' minicomputers and IBM PCs. The products drew mixed responses from analysts.

"I think it is a fairly significant announcement. They came out with a comprehensive and easy-to-understand plan for their future direction," said Elizabeth Levy, an analyst with market research firm Dataquest, Inc. Levy said ONE Plus is likely to be competitive with CEO, All-In-1, Wang Laboratories, Inc.'s Wang Office and Hewlett-Packard Co.'s Personal Productivity Center.

"The crux of the announcement, in my opinion, is that they are thinking about the importance of departmental processors and are willing to support other vendors and the IBM PC," she added, citing the examples of links to HP and DG application packages. Levy noted that multivendor support, as well as flexibility to buy the DPS 6 Plus hardware in configurations ranging from one to four pro-

Honeywell, Inc. DPS 6 Plus: Two models

	Model 410	Model 420
Processors	1-4	1-4
MIPS ¹	1-4	1-4
Chassis Slots	16	32
Memory (M bytes)	4-16	8-64
Disk Capacity (G bytes)	3.3	6.6
Local-Area Network Controllers	1	2
Communications Ports	64	160
Peripheral Ports	3	7
Number of Users	10-50	20-150
Typical Price	\$115,000 ²	\$410,000 ³

¹ Millions of instructions per second, according to vendor claims.

² Includes 4M bytes of memory, 18 terminals, 284M bytes of disk storage, laser printer, operating system, floppy disk drive and tape drive.

³ Includes four CPUs, 12M bytes of memory, 1.5G bytes of disk storage, 10 printers, operating system and tape drive.

Information provided by Honeywell

cessors with additional support for a Unix coprocessor, makes Honeywell attractive to new accounts running other vendors' equipment as well as government agencies and manufacturers that need Unix.

Outdated packages

However, Ronni Marshak, associate editor for Seybold's Office Computing Group, Inc., noted, "I don't find their announcements nearly as exciting as Honeywell does." She said the idea of linking manufacturing, office and building controls is not new and that despite gains in communications abilities and ease of use, some of the software packages are outdated.

The improvements that Marshak cited include the ability for users to bypass menus and Honeywell's hiring of a dedicated sales force for the small-business market. But she noted that word processing software is still page-bound, meaning that users cannot view portions of two pages simultaneously.

She added, "Honeywell is not doing as badly as we in America might think. They are No. 1 in Canada and No. 1 or No. 2 in Australia and Great Britain. They don't have that many installations, but each installation has hundreds of users. You never hear bad things from customers about Honeywell. It's just that you don't hear anything exciting."

Eugene Manno, group vice-president for Honeywell's Small Computer and Office Systems Group, said the company developed ONE Plus because of the changes in customer requirements. Honeywell hired a research firm to examine end-user needs with an emphasis on features for which the user, rather than the MIS department, asked.

"There has been a proliferation of personal computers, and most organizations own computers from different vendors," Manno said. "ONE Plus

enables personal computer users to contribute to the overall development of work-group productivity."

ONE Plus is a modular system composed mostly of programs that have been available previously but have been modified with common menu-based interfaces. All of the modules run on the DPS 6 Plus and on earlier DPS 6 systems with the GCOS 6 Model 400 Revision 4.0 operating system. The first group of modules, scheduled for September delivery, includes electronic mail, document processing, time management, spreadsheet, list processing and asynchronous communications.

A key element of the second group of modules, to be available in December, is Onexchange, a document library module that lets users of different systems exchange data and collaborate on creating documents.

It reportedly stores documents in native format and translates them into the native format of the user's system and application. For example, a document written under the Onetext word processing system could be edited using an independent personal computer word processing package.

Another element of the second group is Onebase, a departmental information base running on the DPS 6 and designed to use the Oracle Corp. Oracle relational data base management system to let PC users query Honeywell and non-Honeywell mainframes and minicomputers. Oracle acts as a bridge to DPS 6 data bases or mainframe data bases.

The software modules are priced individually and in packages, with prices for the modules ranging from \$500 for the Onebase Data Translator to \$6,500 for Onelink. A package called ONE Plus Integrated Office System, including Onexchange, Onemail, Onetime and Onetext costs \$8,930. The ONE Plus Office Exchange System, including Onexchange and Onemail, costs \$3,275.

DPS 6 Plus takes the torch

By James Connolly

NEW YORK — The 32-bit virtual memory minicomputer introduced as Honeywell, Inc.'s new basic office system platform last week features the addition of shadow processors, a Unix coprocessor and a built-in local-area network (LAN) controller.

Honeywell offered the DPS 6 Plus as the successor to its 11-year-old DPS 6 minicomputer line, although a company official said the previous product line remains available.

David W. Cleary, Honeywell vice-president and general manager for the Office Marketing Systems Division, said Honeywell replaced eight CPU boards in the DPS 6 with one board in the DPS 6 Plus. He also said the company, which released two basic, mid-range models of the new line, will offer low-end models next year and high-end versions in late 1987 or early 1988.

Current DPS 6 users reportedly can move programs written for the DPS 6 GCOS 6 Model 400 operating system to the new processors, which run Honeywell Virtual System (HVS) 6 Plus. Those GCOS programs will run at about the same speed on the new system as on the old unless they are recompiled to

run faster under HVS, Honeywell said.

The DPS 6 Plus Models 410 and 420 can be configured with one to four processors each, with a single processor performing 1.1 million instructions per second (MIPS) and a quadratic processor offering approximately 4 MIPS, Cleary said.

The 2G-byte virtual memory unit reportedly supports demand paging with 1,024 segments and a maximum segment size of 2M bytes. The office environment system also features shadow processors that provide error checking. The system includes a LAN controller that reportedly will allow support for both Ethernet and token-ring networks and includes a Unix coprocessor to allow concurrent Unix and HVS operations.

"I thought the real sleeper was the shadow processors in there. That sort of thing gives me the idea that they are thinking of making the system fault tolerant at some point," said Molly Upton, an industry analyst for International Data Corp. of Framingham, Mass.

She added that the network controller will position the DPS 6 Plus well as a network server, particularly as lower cost systems debut.

Blumenthal meets with Sperry users

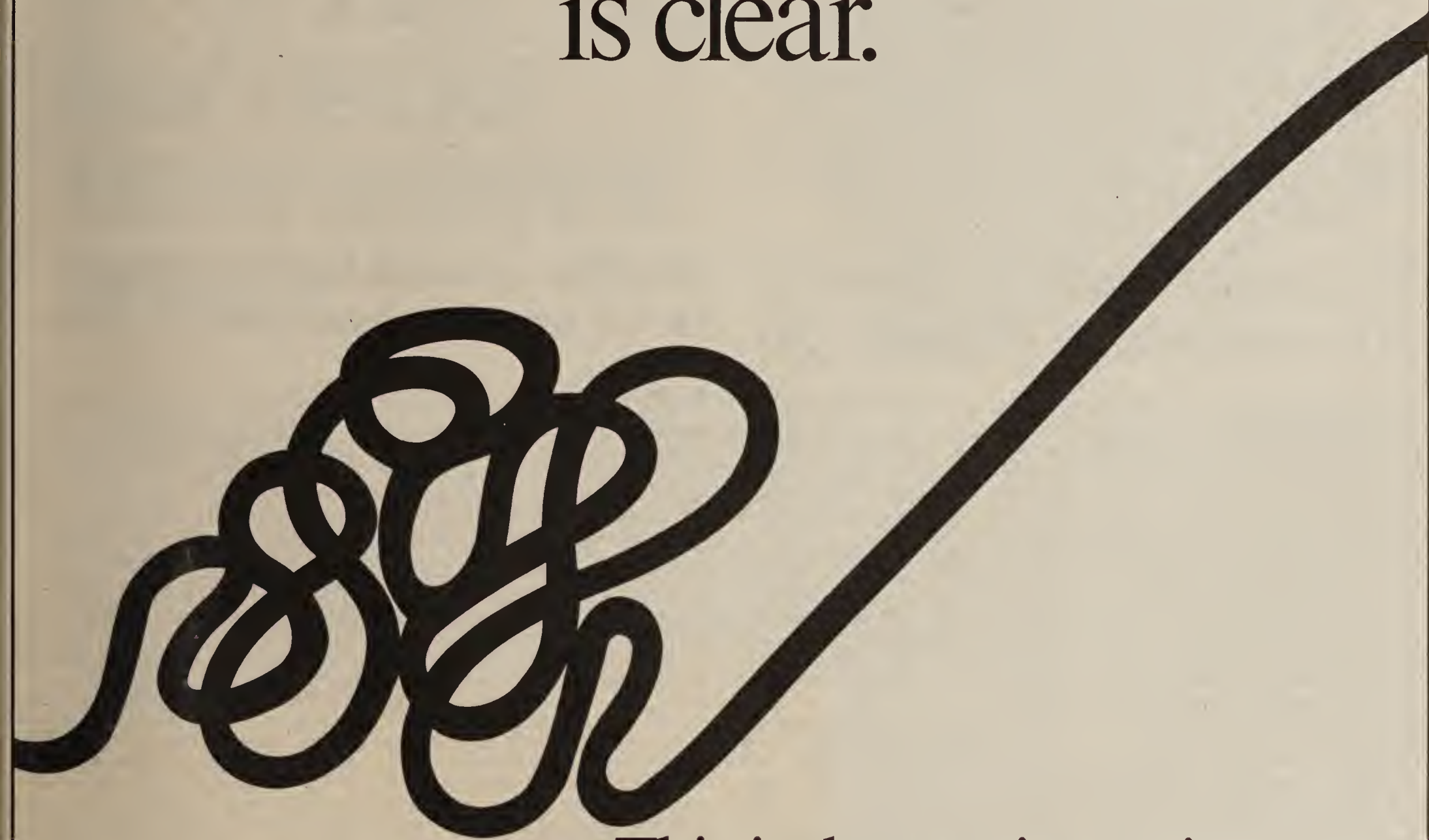
NEW YORK — Officials of three Sperry Corp. users groups last week met with top executives of Sperry and Burroughs Corp. to discuss the impact the proposed merger of the companies will have on customers.

In a prepared statement, officials of Use, Inc., AUUA, Inc. and the Sperry Users Association/Europe — together representing 2,000 user sites

— said the meeting was held "to obtain assurances that the investment of Sperry users, now and in the future, will be fully protected after the merger is completed."

The users group representatives met with W. Michael Blumenthal, chairman and CEO of Burroughs, and Joseph J. Kroger, president and chief operating officer of Sperry.

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NEWS

IBM adds five-cartridge autoloader to 3480 tape subsystem

Long-expected feature reduces operator tasks

By Jim Connolly
and Donna Raimondi

RYE BROOK, N.Y. — In a move that has been expected since the cartridge tape drive debuted more than two years ago, IBM last week announced an automatic loader for its 3480 Magnetic Tape Subsystem.

The 3480 Automatic Cartridge Loader feature, which holds up to five 4-in. by 5-in. cartridges, is intended to minimize the human role in running the tape drive. When the 3480 was announced in early 1984,

analysts and users were surprised that there was no autoloader feature, which was seen as a potential advantage over the 3480's predecessor, the 3420 reel-to-reel drive that requires an operator to change tapes.

The autoloader, which attaches to the front of the 3480 Model B22, requires seven seconds to remove one cartridge and insert another. It can operate under manual control, sequential control or control of the IBM MVS operating system. It runs under IBM VM only with an MVS guest.

However, even with the five cartridges moving through the autoloader, operator intervention to add more cartridges is apparently still necessary when performing a task

such as backing up a 2.5G-byte IBM 3380 or 5G-byte 3380 Model E disk drive, because each cartridge holds a maximum of only 200M bytes of data, according to IBM product literature.

IBM analyst Thomas Henkel of the Boston-based Yankee Group noted that the autoloader was not unexpected and said that some IBM competitors, such as Storage Technology Corp., National Advanced Systems Corp. and Amdahl Corp., have been rumored to be planning autoloaders for the 3480-compatible drives that they have under development.

Henkel, asserting that the five-cartridge limit appears too low to justify the price of the autoloader, added, "My feeling is that this is only

part of the story. I still think IBM has some sort of a tape library on the way and that this would be a part of it."

The autoloader has a list price of \$8,900 and will be generally available in August. However, IBM said that customers with 3480s already installed can order one for \$7,600 by Sept. 30 under a special introductory price.

Ruth Weiland, data control supervisor at American Cyanamid Co. in Clifton, N.J., said her company is in the process of installing 3480s. "It is difficult to say if the automatic cartridge loader will be valuable, because we are really not using the product yet."

Wyse augments PC line with AT-compatible Wysepc 286

By Maura McEnaney

SAN JOSE, Calif. — Terminal manufacturer Wyse Technology, Inc. today enhanced its personal computer product line with the introduction of an IBM Personal Computer AT-compatible computer. The company also introduced three new monitors and two graphic display boards.

Wyse introduced its first PC product in late 1984. The new AT version will be sold through Wyse distributors and OEMs. Analysts say they believe Wyse will have to stick to its existing distribution channel in order to compete in the well established market for PC ATs and compatibles.

"That's an awfully competitive market today, and they are not going to compete with Compaq Computer Corp.," said Don Sinsabaugh, of New York-based Swergold, Shefitz & Sin-

sabaugh, Inc.

The Wysepc 286 runs at 10 MHz for increased speed over the standard 8-MHz PC AT, the company said. It provides 640K bytes of random-access memory and eight PC AT expansion slots.

The computer includes a choice of standard PC AT keyboard or IBM Enhanced Personal Computer keyboard. Display options include a medium-resolution monochrome and color graphics monitor or high-resolution graphics monitor in monochrome or color.

The product can be configured with a 1.2M-byte, half-height, single floppy disk drive, a 20M-byte half-height hard disk drive and a 40M-byte full-height hard disk drive. The single, floppy version costs \$2,499; the 40M-byte version costs \$4,199.

Satellite-, ground-based networks vie for overseas mart at ICA show

By Elisabeth Horwitt

ATLANTA — Competition between satellite- and terrestrial-based network offerings, particularly in the overseas market, reached a new high at Telecom '86, the International Communications Association's annual convention, which was held last week.

Several satellite companies brought forth new high-speed links between the U.S. and Europe, and AT&T, British Telecom International, Inc. and France Telecom, Inc. jointly announced high-speed digital transmission services that will run on TAT-8, the optical-fiber transatlantic cable scheduled to be operational in 1988 (see story, left).

A number of communications managers spent a lot of time seeking insight into the satellite-vs.-terrestrial dilemma. "We're looking at everything — fiber, satellite, local-area networks," said Martin Konrad, a manager within E. F. Hutton & Co.'s data communications future planning department.

The brokerage giant already has a C-band broadcast satellite network based on Equatorial Communications Co. equipment, he said. "Now we're looking at interactive C-band networks; we can't use Ku-band because the earth stations are too unreliable in bad weather."

Optical fiber links city building

However, E. F. Hutton also is installing an optical-fiber terrestrial network to link its buildings in the New York City area. "Some of our data applications require a 24M bit/sec. capacity, so we need fiber," Konrad said.

AT&T Communications seemed determined to capture communications business in both the satellite and terrestrial markets. At the conference, the company announced its International Accunet Digital Service, high-speed dedicated channels that will run on the TAT-8 optical-fiber overseas cable. Shortly before that, AT&T received approval from the Federal Communications Commission to offer its Skynet Star Network satellite-based service.

Satellite vendors seemed determined to prove to communications managers that their network offer-

ings have advantages over terrestrial connections. "Propagation delay problems can make satellite links less feasible for some kinds of high-speed transmissions, but they are less expensive and far more reliable and available than terrestrial lines," said Mary Kay Williams, a spokeswoman for GTE Spacenet Corp. She cited a recent incident in which a trawler accidentally snagged three transatlantic cables at once, resulting in major service outages.

GTE Spacenet announced Skystar International, a satellite-based overseas service that will directly compete with AT&T's International Accunet Digital Service. Through GTE Spacenet's gateway in Chicago, users of the company's U.S. satellite network, Skystar, can transmit overseas via Intelsat Business Service. Intelsat Business Service provides satellite-based links between the U.S. and Europe. Skystar International will support transmission rates of 56K bit/sec. and up.

GTE Spacenet awaits FCC approval

GTE Spacenet is currently awaiting FCC approval and working out agreements with foreign Postal Telephone and Telegraph administrations, according to Williams. Pricing for the U.S. portion of the link provided by GTE Spacenet will range from \$4,000/mo to \$6,000/mo, she added, with foreign administrations offering similar pricing.

GTE's terrestrial networking subsidiary, Telenet, announced an agreement in principle with Telecom Canada to file a tariff that would create a permanent virtual circuit between the two companies' packet-switched services.

RCA Network Services, Inc. introduced Microstar Ku- and C-band International Business Satellite Services, which provide Intelsat-based connections between the Eastern Continental U.S. and Europe at speeds ranging from 64K bit/sec. to 1.544M bit/sec.

Also announced were Microstar Co. 56K bit/sec. and 1.5M bit/sec. domestic services. RCA provides customer Ku-band earth stations and a space segment on RCA Satcom K-Series satellites as part of its domestic offerings.

Transatlantic digital cable planned

By Elisabeth Horwitt

ATLANTA — In a move that will provide customers with a terrestrial alternative to satellite-based high-speed data links, AT&T, British Telecom International, Inc. and France Telecom, Inc. jointly announced digital transmission services that will run over TAT-8, the first optical-fiber transatlantic cable system.

The announcement, which was made at International Communications Association's Telecom '86 conference, heralds "the first opportunity to establish a fully digitized terrestrial link" between the U.S. and Europe, according to France Telecom spokesman Alain Coursaget.

"Right now, anyone that wants to transmit 56K bit/sec. or faster must use satellite links," said British Telecom International President Michael Ford.

Two days after the announcement, British Telecom obtained customer commitments from several companies, including Mobil Oil Corp., British Airways and Barclays Bank PLC.

Although TAT-8 is not scheduled to go into operation until 1988, businesses will be able to place their orders with AT&T for AT&T's TAT-8-

based International Accunet Digital Services on July 2 if the company's tariff filing is approved by the Federal Communications Commission.

AT&T's four International Accunet Digital Services will provide customers with private dedicated channels at data rates of 56K, clear 64K, 1.5M and 2.05M bit/sec.

Customers will be charged separately by AT&T for the U.S. side of the link and by either British Telecom or France Telecom for the European part of the link, company spokesmen said. AT&T's portion of the 56K and 64K bit/sec. services will be priced at \$4,000/mo. Its portion of the 1.5M bit/sec. service will cost \$40,000/mo, and the 2.05M bit/sec. service will cost \$52,000/mo.

AT&T will offer links between its 56K bit/sec. International Service offering and domestic transmission facilities such as AT&T Dataphone Digital Service and local telephone company connections, the firm said. A link between the 1.5M bit/sec. International Service and AT&T's domestic Accunet T1.5 Service will also be provided. Domestic links for the 64K and 2.05 bit/sec. International Services have yet to be announced.

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CA Los Angeles Jun 10	MA Boston Jun 19, Jul 16	Cincinnati Aug 5	UT Salt Lake City Jun 5, Aug 6
..... Jul 10, Aug 6	Burlington Aug 12	Cleveland Jul 22	VA Norfolk Jun 4
Newport Beach Jul 15	MD Bethesda Jun 12	Columbus Aug 12	Richmond Jun 19
San Diego Jun 17, Aug 7 Jul 9, 23, Aug 7	Dayton Jul 8	VT Burlington Aug 6
San Francisco Jun 19, Aug 5	ME Bangor Jul 3	OK Oklahoma City Jun 24	WA Seattle Jun 12, Jul 15
Sunnyvale .. Jun 10, Jul 8, Aug 7	MI Detroit Jun 10, Jul 15, Aug 19	Tulsa Aug 26	WI Milwaukee Jul 17
CO Denver Jun 17, Jul 17	Grand Rapids Jun 13	OR Portland Jul 24	
CT Hartford Jul 16	MN Minneapolis Jun 26, Jul 22	PA Harrisburg Jul 8	Canadian Seminars
New Haven Aug 20	MO St. Louis Jun 11, Jul 30	King of Prussia Jul 24	Calgary Jun 3
FL Jacksonville Aug 5	NE Omaha Jul 9	Philadelphia Jun 18	Halifax Aug 20
Tampa Aug 6	NJ Cvt. Station Jun 5, Aug 7, 28	Pittsburgh Jun 19, Aug 7	Ottawa Jun 12, Jul 12, Aug 14
GA Atlanta Jul 15	Iselin Jul 8, 22	Scranton Aug 5	Chicoutimi Jun 18
IA Des Moines Jun 25, Aug 27	NY Albany Jul 23	RI Providence Jul 8	Toronto Jun 3, Jul 8, Aug 5
ID Boise Jul 31	New York City Jun 12, 25	TX Austin Jul 10, Aug 19	Vancouver Jul 10
IL Chicago Jun 12, Jul 8, Aug 14 Jul 24, Aug 12, 26	Dallas Jun 11, Jul 22	Winnipeg Jun 3, Aug 5
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NEWS

Computer Associates users get first opportunity to air gripes

Problems abound, but forum is welcomed

By Charles Babcock

ST. LOUIS — Kenneth D. Moore and Robert G. Keller, MIS managers at a specialty chemical company, had reason to appreciate the first user conference staged by Computer Associates International, Inc. last week.

For one, the company provided technical experts on its security, tape management and scheduling packages, which Keller and Moore were trying to evaluate for purchase.

For another, it was convenient. Moore is director of the corporate

computing facility, and Keller is the director of technical services for Mullinkrodt, Inc. in St. Louis. That city served as the Long Island, N.Y.-based Computer Associates' conference site because it was central to its customer base.

A third reason was timing. After being in business for 10 years, Computer Associates staged its first users group meeting three weeks before a major competitor, Uccel Corp., was scheduled to come to St. Louis for its users group conference. So Moore and Keller could get live demonstrations of competing packages without having to leave home.

"We're talking to company officials about a product during the day,

then at night we're asking their customers over drinks exactly what it does and doesn't do," Moore said with a broad smile.

Much the same sort of process was going on among the other 400 attendees, who sat through Computer Associates' talks and demonstrations in the Adam's Mark Hotel during the day and lounged on the paddle-wheel riverboats at night.

Attendees welcomed conference

Many attendees expressed satisfaction that Computer Associates finally decided to stage a user conference, and several pointed out that former customers of Value Software, Inc., a Cherry Hill, N.J., firm ac-

quired by Computer Associates a year ago, were used to regular user conferences and brought pressure to bear on the company to start its own.

Several of Computer Associates' best-selling products, Scheduler, Optimizer and Eztest, came with that acquisition, and Computer Associates has an interest in cultivating the former Value Software's customer base, company officials said.

Computer Associates' rapid rate of acquisition was a frequent topic, with several attendees complaining that the company was growing too fast to manage all the related support issues successfully.

"Most of their products we purchased before Computer Associates bought up the companies. We're not that crazy about Computer Associates," said Bill Jones, manager of technical support at Durham Life Insurance in Raleigh, N.C.

Some customer dissatisfaction

While other users praised Computer Associates support, especially when the originators of the product were still providing hot-line and on-site support, company officials sometimes encountered customer dissatisfaction on their own. James Lansing, Computer Associates' director of MIS operations, addressed one session and cited several Computer Associates products used in-house. "How do you find support?" questioned a voice from the audience as the rest of his listeners chuckled. "We're not a paying customer," Lansing responded, adding, "We have our ways of getting support, and you have yours."

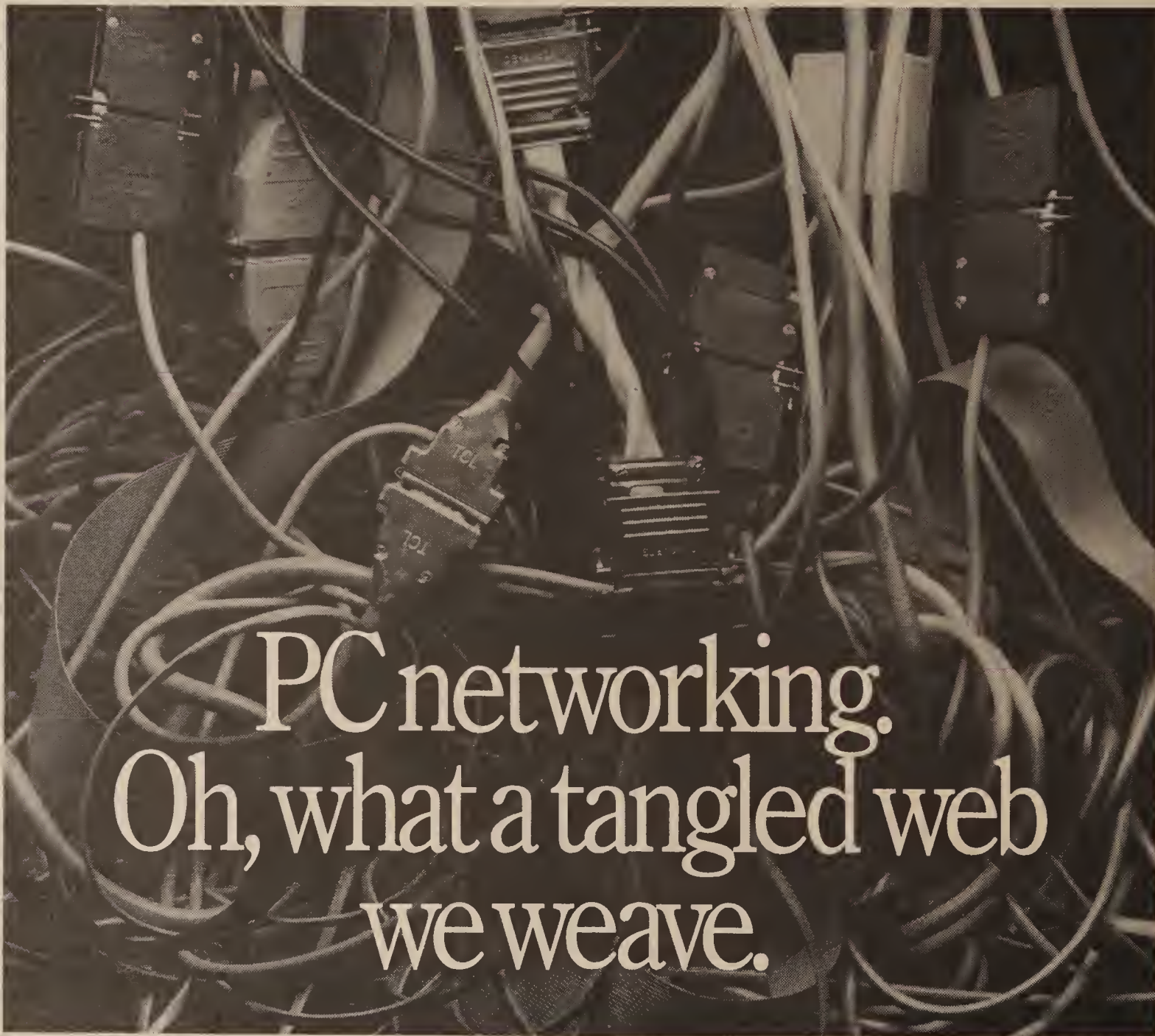
Other customers complained about documentation. A spokesman for a Toronto firm said he had pointed out several mistakes in documentation to Computer Associates support personnel last fall, and the mistakes were not corrected when new documentation was issued. Company officials, including Chairman Charles Wang in a luncheon speech, acknowledged the problem, saying steps were being taken to correct it.

Another customer recounted his experience as an alpha site for Computer Associates' Release 6.2 of Scheduler. The customer, who asked to remain anonymous, said there were so many problems getting the software up and running, however, that he would "never again" serve as an alpha site.

Reaction to session speakers, drawn mostly from the ranks of Computer Associates executives, also varied. Many users came away impressed with Computer Associates' expertise in IBM operating systems and systems utilities, but some wanted to see experienced users put in front of conference attendees.

Coming out of a presentation on Computer Associates' relational data base management system, CA-Universe, one listener, Mary Beutler, a systems programmer with the city of St. Louis, complained, "It wasn't very informative. I didn't like it."

Speaking at Tuesday's lunch, Wang cited the company's growth to \$191 million in revenue in fiscal 1986, an increase of 48% over 1985. The growth was attributed to the pace of acquisitions and the expansion in sales of mainframe and micro software.



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NEWS

IBM adds three processors to 10-year-old Series/1 line

Minis offer 5¼-in. disk drives; age of family in question

By David Bright

RYE BROOK, N.Y. — Apparently aiming to extend the life of its 10-year-old Series/1 minicomputer line, IBM last week introduced three models with 5¼-in. disk drives.

Among the processors is IBM's second Personal Computer AT-compatible Series/1, incorporating the 8-MHz Intel Corp. 80286 CPU made available in PC AT versions earlier this year [CW, April 7].

While some observers suggested that IBM has been clinging too long to an outdated architecture, the Series/1 has seen a fair degree of popularity as a niche machine, particularly in communications applications.

First introduced in 1976 as a general-purpose system, the Series/1 has an installed base of more than 42,000 systems worldwide, with 8,000

units shipped in 1985, according to estimates from International Data Corp., a market research firm in Framingham, Mass.

IBM's intentions perplexing

Nevertheless, some IBM watchers do not see much of a market for the new products and are perplexed as to IBM's intentions. "I don't want to call it obsolete, but it's certainly not a growth product anymore," said Harry Edelson, president of Edelson Technology Partners, a consulting and venture capital firm in Saddlebrook, N.J.

Edelson predicted that within two or three years, IBM will finally phase out the Series/1 line and replace it with "fancier" systems. But he praised the Series/1 for lasting 10 years when the average product life cycle at IBM is only six years.

Edelson added that IBM's PC family has been cutting into Series/1 sales. In fact, one consultant, George Best, president of Cherry Hill, N.J.-based Systems Consulting, Inc., has been helping

two clients replace Series/1s with groups of IBM PCs. Best said the result has been greater performance at lower cost.

"I'm not really sure what IBM's strategy is," Best said. "The first Series/1 PC they announced [CW, March 11, 1985] is pretty much nowhere, marketwise."

IBM boasts two uses

However, speaking at an executive conference in Palm Springs, Calif., last month, William Grabe, IBM vice-president and assistant group executive for the Information Systems and Products Group, said IBM is especially enthusiastic about two uses for the Series/1.

The first is IBM's collaboration with General Motors Corp. on GM's Manufacturing Automation Protocol (MAP). The second is in IBM's own manufacturing. Grabe said a pilot installation being developed with the Series/1 will help IBM evaluate MAP for all of its manufacturing sites.

Available in September, the three processors are the Series/1 4956 Models G10

and H10 and the desktop Series/1 5170 Model 496, which is integrated within the IBM PC AT. Prices begin at \$16,500 for the G10, \$18,500 for the H10 and \$10,695 for the 496. Prices on previous Series/1 4956 models were up to \$22,265.

Operating systems available on the three models are new versions of the Series/1 EDX and Realtime Programming System that support the 5¼-in. disk drives. EDX Version 5.2 is available for a one-time cost of \$750 to \$5,500, depending on the processor model; the Realtime Programming System Version 7.2 costs \$7,000 to \$12,500, also depending on processor model.

According to IBM, much of the new systems' improved performance and lower costs stem from the use of the 5¼-in. hard disk drives. The G10 and H10 each come with a 40M-byte hard disk drive and a 1.2M-byte 5¼-in. floppy disk drive. Space is provided within the systems for two optional drives — a floppy and a hard disk or two hard disks. The three proces-

sors each come with 1M byte of random-access memory, expandable to 2M bytes on the H10.

On the G10 and H10 models, a 400K-byte, microprocessor-driven cache memory is used to increase disk throughput.

According to IBM, customers can run many current Series/1 applications on the AT-based Model 496. While PC ATs currently support just one terminal under IBM's PC-DOS operating system and three under Unix, the Model 496 hosts up to six terminals and, with an additional card, can host 12.

The IBM PC AT's 8-MHz Intel 80286 microprocessor serves as an I/O controller for the Series/1; when not in Series/1 mode, the computer can operate as an IBM PC AT. A second floppy or hard disk can be added as an option.

To cost-effectively increase storage capacity on Series/1 systems, IBM introduced the 358M-byte 3CA disk subsystem and the 358M-byte 3CB expansion unit. The 3CA costs \$24,000; the 3CB costs \$19,900.

Plus Development unveils 20M-byte version of Hardcard for IBM PCs

By Maura McEnaney

MILPITAS, Calif. — Hard disk expansion board pioneer Plus Development Corp. today joined its competitors with the introduction of Hardcard 20, a 20M-byte version of its 10M-byte Hardcard for use on the IBM Personal Computer, Personal Computer XT and compatible

microcomputers.

Although a late entry into the 20M-byte arena, the Hardcard 20's 45-msec average data access time is a considerable improvement over competitive products and will increase performance of software that requires multiple access or data storage capabilities, analysts said.

The Hardcard 20, priced at \$895, is a single-slot expansion board the same size as the Plus Hardcard, originally priced at \$1,095. It consumes eight watts of power, compared with 14 watts for the Hardcard, and is available immediately.

Through a voice-coil actuator used in parent company Quantum Corp.'s 5¼-in. Model 540 disk drive, the Hardcard 20's access time is faster than the 65-msec average access time of Hardcard and the 85-msec average access time of the PC XT drives.

"This puts the PC add-on market almost in a class with the early PC ATs, which had a 20M-byte, 40-msec access time," noted Phil Devin, personal computer storage analyst at Dataquest, Inc.

Users running Unix or data base management system packages that require large disk access requirements can benefit from the Hardcard 20's faster access time, noted Jim Porter, publisher of "Disk/Trend News."

Since Plus introduced Hardcard last year, approximately 23 vendors have introduced versions of a hard disk on a card. Current 20M- and 30M-byte expansion board versions take up 1½ slots, however.

Plus has been criticized for its late entry into the 20M-byte market, as other vendors offer more capacity in their products at a cheaper

price. "Almost immediately, the market was established as a 20M-byte market," Devin said. "Unfortunately, Plus has been awfully late in developing it."

Alert users got an early view of Hardcard 20 recently when a photo of the then-unannounced product accidentally appeared in print ads

for the Hardcard 10. Nevertheless, analysts like Devin are impressed with Hardcard's increased access time and the product's single-slot capacity.

"Call it a just-in-time market introduction, because if they waited much longer, they would have blown it," Porter said.



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NEWS

House passes 'federal interest' interstate computer crime bill

Computer fraud, abuse penalized

By Mitch Betts

WASHINGTON, D.C. — The U.S. House of Representatives last week approved the Computer Fraud and Abuse Act of 1986, a bill that would give the federal government authority to prosecute interstate computer crimes involving private-sector computers.

The bill covers computer-assisted fraud, malicious data tampering and trafficking in stolen passwords with penalties of up to five years in prison. It now goes to the U.S. Senate, where the Senate Judiciary Committee is expected to send the bill to the full Senate for enactment sometime before November.

As most states have laws against intrastate computer crimes, the federal bill is carefully designed to extend jurisdiction to only so-called "federal interest computers." These are defined as computers used by the federal government or financial institutions and computers involved in an interstate computer crime.

Rep. William J. Hughes (D-N.J.) sponsored the bill and maneuvered it through the House after six months of negotiations over language to win the support of key members of the Senate and the U.S. Department of Justice.

Uncontroversial bill

The negotiations apparently paid off, since the bill was considered so uncontroversial that, under expedited rules, it passed the House by a voice vote with no opposition. Discussion of the bill on the House floor lasted little more than 20 minutes.

Hughes noted the bill is the culmination of four years of bipartisan work in Congress on computer crime legislation. He said that business and government have a dual responsibility to fight computer crime, the former with technical security controls and the latter with appropriate laws and prosecutions.

The legislator, who is chairman of the House Subcommittee on Crime, said computer criminals combine "technological skill with old-fashioned greed and criminal intent to rob banks or destroy business records or steal trade secrets."

Hughes added, "Unless we act now to secure the locks and provide the laws, computer crime will be the crime wave of the next decade."

The measure would establish two felony offenses for those who intentionally, and without authorization, gain access to a federal interest

computer. One felony covers access to commit a fraudulent theft; the other covers access to alter information in the computer, or prevent use of the computer, thereby causing a loss of \$1,000 or more in a year.

A third offense, a misdemeanor, has been established for members of pirate bulletin board systems who are

caught trafficking in computer passwords belonging to others with the intent to commit interstate commerce fraud.

Specifically covered as financial institutions are federally insured banks, thrifts and credit unions; members of the Federal Reserve System, the Federal Home Loan Bank System and the Farm

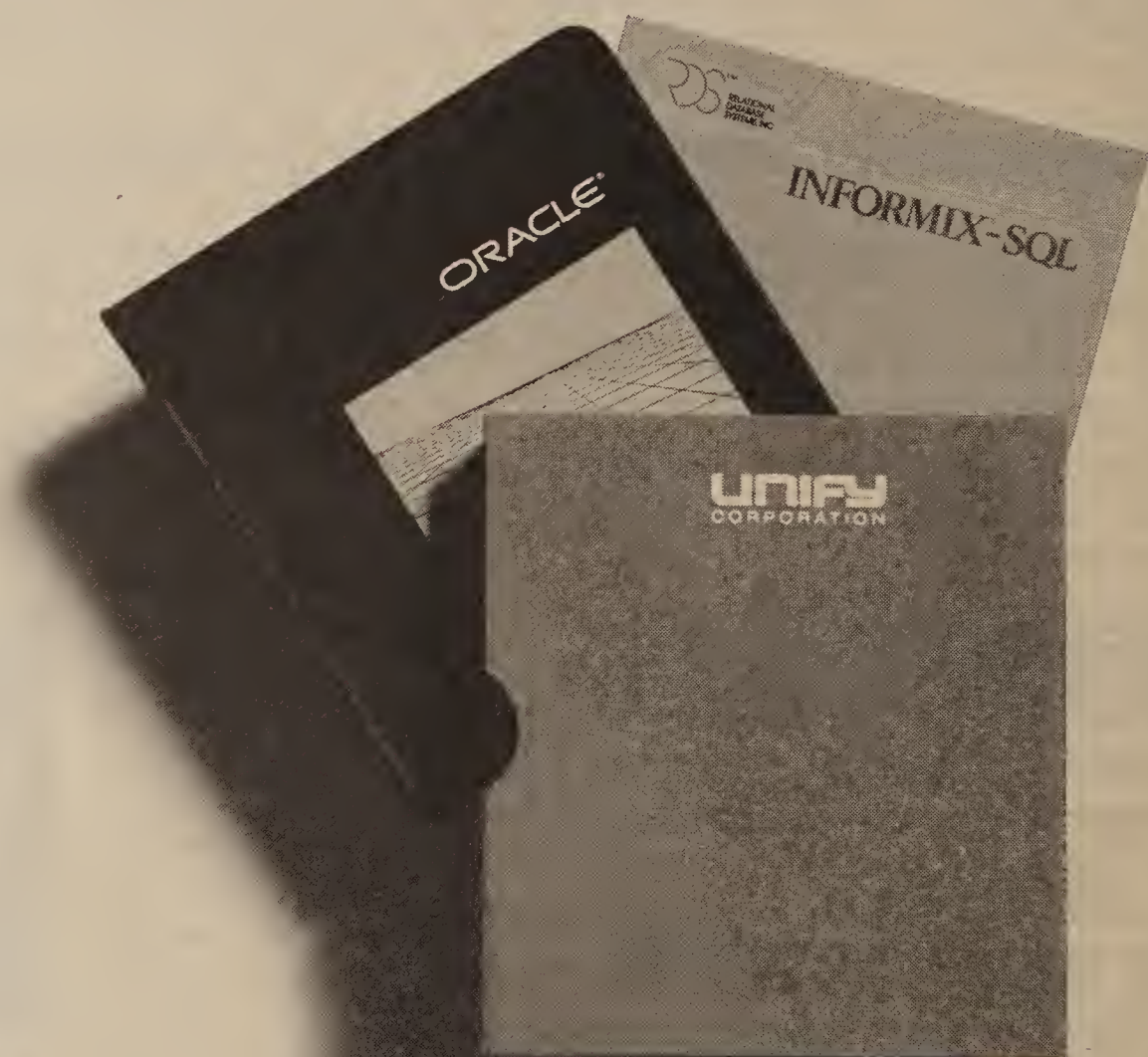
Credit System; and registered securities brokers.

Rep. Bill Nelson (D-Fla.), a leading supporter of the bill, said the measure will "flesh out the skeletal structure that was passed in 1984," referring to the computer crime legislation enacted two years ago that covers only federal government computers.

Provisions covering pri-

vate-sector computers were stripped from the 1984 bill by Sen. Paul Laxalt (R-Nev.), who argued they would intrude on state authority. This year, Laxalt, Hughes, Sen. Paul S. Trible Jr. (R-Va.) and the Justice Department negotiated a compromise bill that covers private-sector computers involved in interstate computer crimes.

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NEWS

Digital Research aims new operating system at corporate mart

Concurrent DOS faces uphill battle

By Douglas Barney

MONTEREY, Calif. — In an effort to regain ground lost to Microsoft Corp. in the microcomputer operating systems market, Digital Research, Inc. today is sched-

uled to announce Concurrent DOS Expanded Memory (XM) and is aiming it directly at large corporations.

"Our target end user is the corporate user," said John Rowley, president of Digital Research. According to Rowley, users in large corporations who desire multitasking and who wish to use existing applications will be

a key market.

But Digital Research will have a tough time selling Concurrent DOS against Microsoft's MS-DOS. "I don't think the outlook is very good. Microsoft is pretty well entrenched, and IBM is still shining on them," said Thomas Roberts, a research analyst with Framingham, Mass.-based International

Data Corp. (IDC). Despite the skepticism, Roberts sees the product as succeeding in market niches.

The new \$395 operating system, which will be available next month, takes advantage of the two most popular expanded memory specifications, allows multiple programs to run concurrently and addresses up to

8M bytes of random-access memory.

Although Concurrent DOS can run existing applications written for MS-DOS, IBM PC-DOS, Concurrent DOS and CP/M 86 without modification, the ability to run IBM-compatible applications is the system's strongest suit. "For us, IBM compatibility is essential," Rowley said.

The ability to run CP/M applications concurrent with MS-DOS applications is a feature prized by some. According to Damian Rinaldi, director of software research for IDC, many users will appreciate Concurrent DOS' support of "orphan software." "It gives you the ability to run multiple vendors' programs. My reaction to the product was positive."

Digital Research also an-

”

'It gives you the ability to run multiple vendors' programs. My reaction to the product was positive.'

— Damian Rinaldi
International Data Corp.

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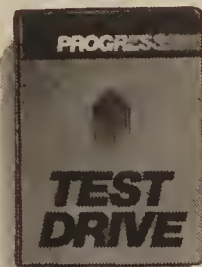
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nounced a joint marketing agreement with Quadram Corp. under which Concurrent DOS will be bundled with Quadram's Quad EMS+ family of expanded memory boards. Cynthia Ringo, manager of Quadram's Board Products Division, claims the firm held back on releasing a product until "the availability of a viable companion software product."

According to Rowley, strategic alliances like the Quadram arrangement will help boost the popularity of Concurrent DOS. "There is the opportunity to make this product much more visible and much more mainstream in the PC marketplace," he said.

One of the major differences the combination of Concurrent DOS and the Quadram board has with other expanded memory schemes is the program code's ability to access expanded memory, analysts said. Other expanded memory schemes, such as the Lotus/Intel/Microsoft Expanded Memory Specification and the AST/Quadram/Ashton-Tate Enhanced Expanded Memory Specification, only allow data to access expanded memory.

Digital Research will distribute Concurrent DOS mainly through its 87 OEMs and 250 value-added resellers. The firm has so far shipped some 250,000 copies of Concurrent DOS, resulting in \$30 million in sales.

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VIEWPOINT

EDITORIAL

Learning by listening

The good news out of IBM, via its recent Palm Springs, Calif. executive conference, is that Big Blue has heard its users loud and clear. The fact that many, many IBM users are disgruntled and unhappy is no secret, since they have been very public with their frustration at IBM's snail's pace in offering a clear direction for future systems.

A case in point is the confusing saga of System/36 and System/38. Speaking in Palm Springs, William Grabe, an IBM vice-president whose group is responsible for the two systems, once again reinforced the System/36's status as IBM's departmental solution. He also reaffirmed the company's commitment to the System/38: "It clearly has the most advanced architecture and data base of our entire mid-range systems product line." Grabe even admitted that IBM had work to do on both systems.

More important, though, Grabe addressed — at least obliquely — the growing confusion among users about which direction IBM will take in choosing one of these systems as the backbone to office integration. He pointed out that IBM is "growing the System/36 and System/38 together," taking the best of both to "establish enhanced system capacity, performance and range."

Deciphering this IBM-speak isn't easy, but it does seem to send the message that IBM is moving the System/38 architecture closer to the System/36 architecture, rather than closer to the 370-based mainframe and intermediate systems.

We applaud IBM's openness in admitting its shortcomings and its apparent effort to correct them. Whether sparked by users' complaints or a slumping market, IBM is starting to listen to its customers.

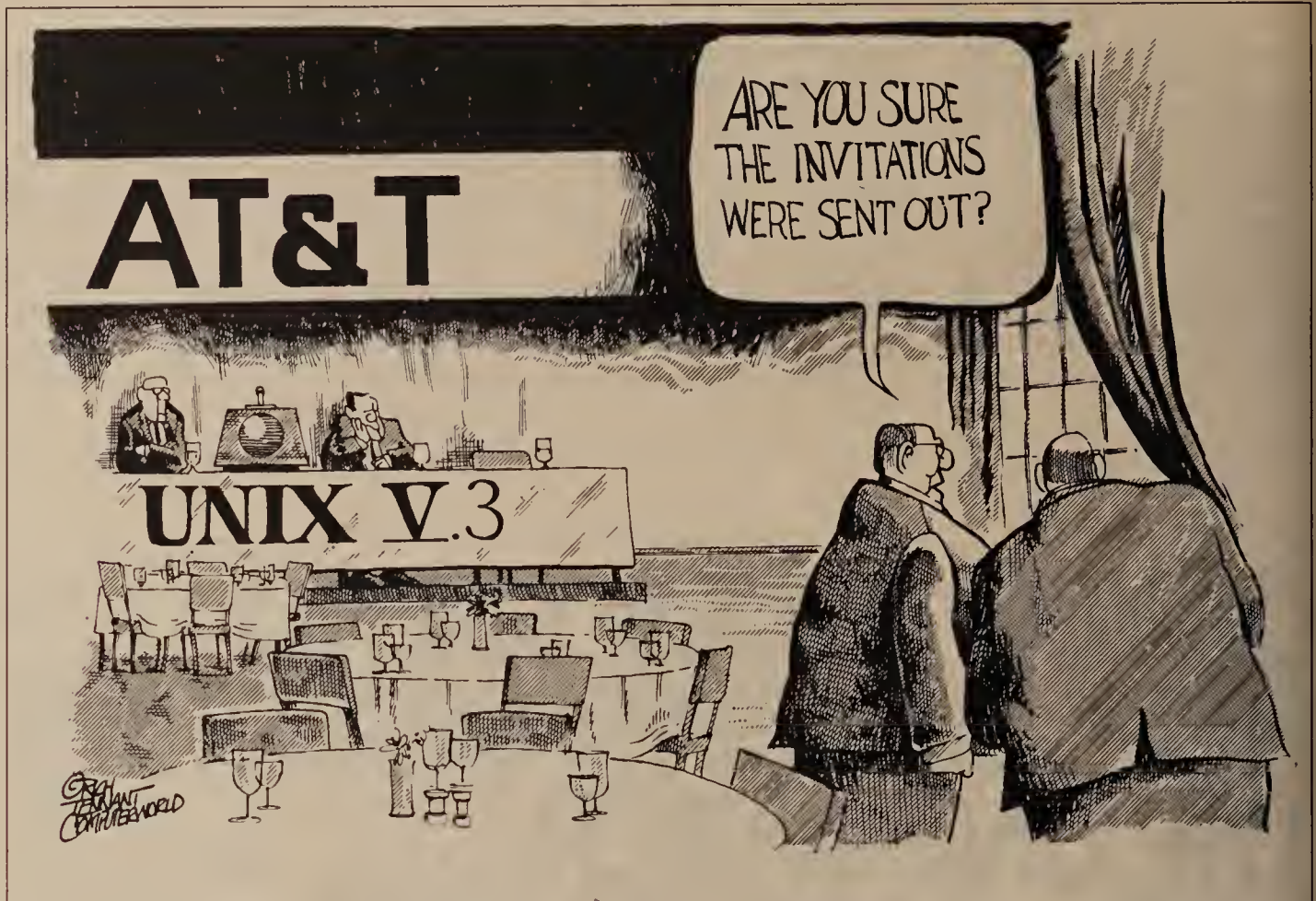
New this week

As AMR Corp. Chairman Robert Crandall tells *Computerworld* in an exclusive interview in this issue, data processing — with American Airline's SABRE reservation system as its heart — is expected to contribute \$100 million in 1986 pretax profits.

Clearly not every company can — or should — market its information services to the degree that American has. But American's strategy highlights an important fact of life for MIS managers: More and more, they must understand how information technology relates to the business as a whole. More and more they must interact with executives and computer users throughout the corporation who are unfamiliar, and perhaps uncomfortable, with information technology.

Such trends have prompted *Computerworld* to launch a new Management section, which begins this week. In addition to charting trends, however, the section will focus on more conventional concerns of information system managers at all levels, such as staffing, budgeting and keeping up with constantly evolving technology. On a more personal level, the section will also address education and career issues.

The section will not tell you how to create another SABRE system. But it will eschew myth for reality and help lay the groundwork for successful information systems management. It debuts on page 103.



LETTERS TO THE EDITOR

Developers add to IBM environment

Your summary of the discussion of software source code at the IBM annual meeting, "Akers sees 'demanding year'" [CW, May 5], was correct but misleading. Since I was the "independent software developer" mentioned, I'd like to clarify the discussion.

I raised the issue of source code in the context of the partnership between IBM and its customers and customers' ability to use IBM products as a base for innovation, sometimes using the products in ways not anticipated by IBM. Source code is a major factor in permitting customers to meet unique business requirements independent of IBM priorities and resources. I also mentioned that IBM often has not followed its own guidelines for converting products to "object code only."

Akers indeed mentioned the need for protecting assets and asserted the correctness of the 1983 decision, but he did so much more graciously than your article indicated. He also agreed with my request for balancing asset protection against maintaining the IBM/customer partnership and invited continued discussions on source code. His remarks recognized that independent software developers often provide products that add value to IBM computing environments rather than competing directly with IBM. The statement "we feel no obligation to serve our competitors" was directed at true competitors not independent software developers or customers.

Gabriel Goldberg
VM Systems Group
Arlington, Va.

Bankruptcy law on software service

As a practicing lawyer specializing in software law, I must commend Irwin B. Schwartz on his approach to the software escrow problem as stated in "When bankruptcy threatens software service contracts" [CW, May 26]. Unfortunately, there is one slight problem with it: It will not work in real life.

No matter how Schwartz designates his security interest, it is, in effect, related to the inability or refusal of the software developer to provide service. If this inability or refusal is in any way related to an appointment of a trustee, an assignment of assets for the benefit of its creditors or filing for bankruptcy (either voluntary or involuntary),

then it comes under the 1978 Bankruptcy Act.

Under the act, the filing of a bankruptcy creates an estate that owns all rights, legal or equitable, the debtor might have in any property. Specifically included are such rights as copyrights, trademarks, patents, processes and other types of intellectual property. It does not matter where the property is held or by whom.

So long as the escrower debtor in bankruptcy retained any title to it at the time of the bankruptcy filing, it is property of the estate. The fact that the escrower debtor previously agreed to transfer of the escrowed material upon bankruptcy or other condition is unimportant.

Even if the debtor manages to remain in business, the escrow beneficiary may still not be home free. The trustee, with the court's permission, may assume or reject any executory contract. Simplistically stated, an executory contract is a contract "on which the performance remains due to some extent on both sides."

As a general rule, if the software escrow contract is part of another contract that requires the parties to do some future action, even if it is unrelated to the escrow, that contract is executory. If it is executory, it can be rejected. If rejected, the software user/escrow beneficiary cannot protest the nondelivery of the escrowed material.

Besides rejecting the escrow agreement as executory, the trustee can also lease, sell or otherwise use the assets of the debtor in bankruptcy in a manner that is opposed to the interest of the escrow beneficiary or some other third party.

Furthermore, if the escrow agent owns its copy of the escrowed material outright and goes bankrupt, the bankruptcy trustee may be able to terminate any executory contract to keep the material secret and sell the source code and documentation on the open market to the highest bidder free and clear of any promise to hold the material secret.

The filing of bankruptcy enjoins any immediate action by the escrow beneficiary to get the escrowed material.

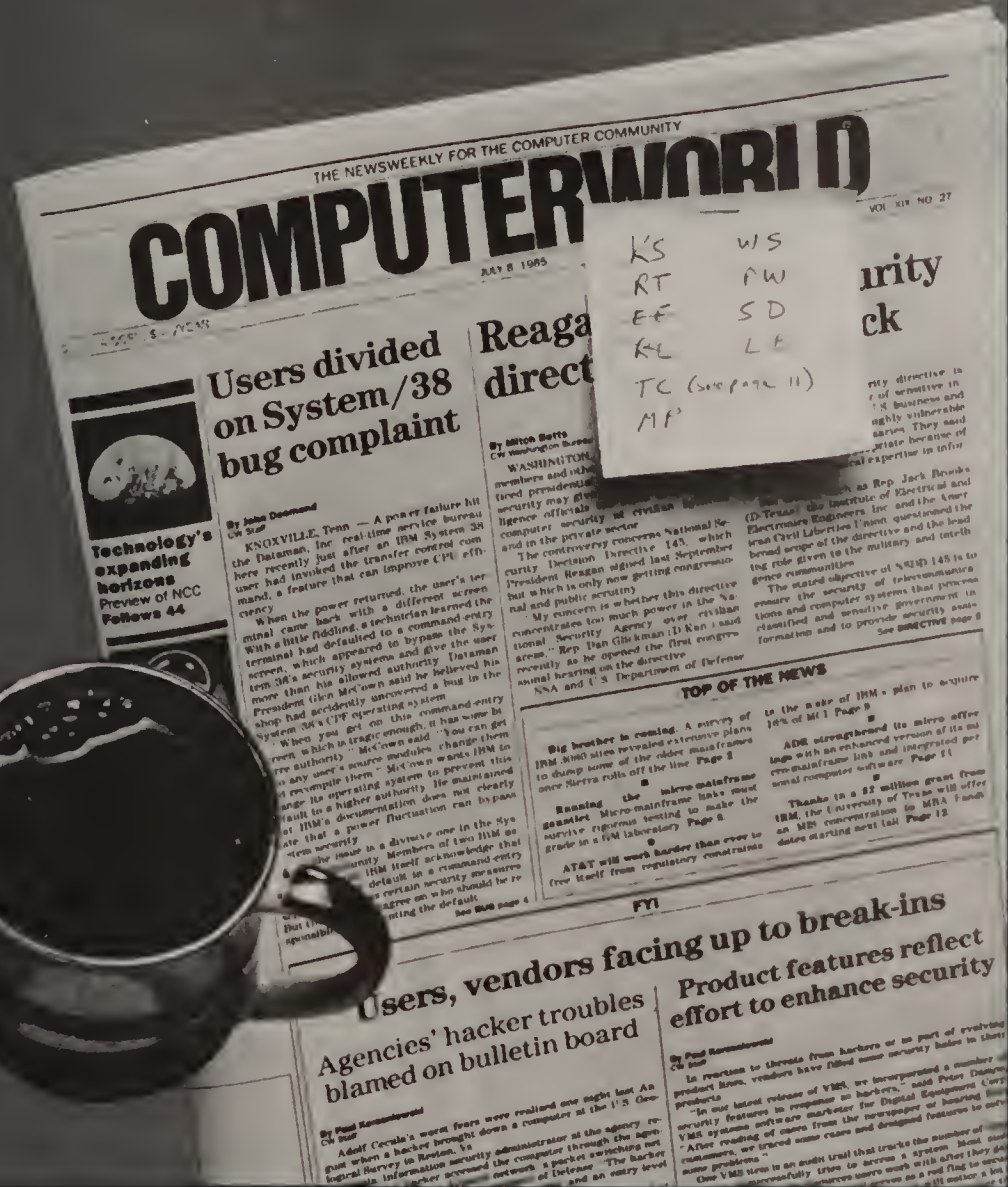
If the escrow beneficiary wants possession of the escrowed material, and is not suffering a present harm, it can file a petition under subsection D, provided it has some interest in the escrowed material. If it is suffering some present harm, then subsection F can be used to get immediate relief. Regardless of the type of injury involved, it will be necessary to get the court's permission.

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VIEWPOINT

Searching for the bright side of dark screens

At a recent conference, a speaker blamed the computer industry slowdown on the sudden discovery by executives in user organizations of "dark screens." That is, personal computers that are not in use eight hours each day.

Of course, this is the usual tempest in a teapot. If managers are actually worried about dark screens, perhaps they should ask themselves a few questions: How many hours, on average, does an employee use his phone? And how would he do without one for the times when it's needed? And how many hours per day does the average American worker use his car?

In short, how many hours a day do you use any of the useful things you own or have the use of? Think of razors, irons, exercise machines, bicycles, skis and office calculators. The real point isn't how often you use something but how important the availability of the object in question is to you for that usage — however limited.

Cost-justifying personal computers

We are often asked by users or their managers to help cost-justify personal computers and/or office automation. There are several approaches to this problem.

One is to insist that the value of the workstation be paid back over a

relatively short period of time, by additional work done by the particular worker who is getting the PC. This is the strictest requirement, possibly applying only to those people whom we know in advance will use the PC for work whose usefulness is agreed upon. Financial analysts doing spreadsheet-type analysis and typists doing word processing are the examples that spring to mind.

If the user organization is willing to look at the quality of the work performed rather than at the quantity, we have lots more justifications to examine. Take the example of a typist who can create 15 pages per day on a typewriter (taking revisions and mistakes into account) and 15 pages per day of near-typeset-quality output with graphics, multiple columns and multiple fonts on a personal computer equipped with a desktop publishing software package. The quantity hasn't increased at all, but the value of the output from a communications point of view has increased quite a lot.

Some organizations look at this differently. Let's assume that there is a reason (or several reasons) to believe that the employee getting the PC will be able to do more or better work but not enough to add up to the cost of a PC over a year or two. And let us further assume based on our experiences that on average, a PC

user will find additional useful but largely unpredictable things to do with the PC on his desk.

Who, for instance, could have predicted the usefulness of Borland International, Inc.'s Sidekick and its brothers — or justified buying a PC based on their use? And yet, if you make lots of phone calls (think of stock brokers, telemarketers, salesmen) this may be the most useful — and most used — package on your PC.



By AMY WOHL

In fact, if the PC screens in your company are dark more often than you like, this is more likely to be caused by lack of adequate education and training than to the usefulness of PCs. If you haven't taught users what a PC can do, either through formal

training or through the availability of useful software and an opportunity to become acquainted with it, then you shouldn't be surprised if users don't know what to do with their new high-status paperweight.

It's important to realize that, for some workers, stand-alone PCs, unattached to anything except the worker's desk, aren't really very useful. Senior professionals and managers may spend most of their time in informal communication and coordination, activities that can be readily supported by computer-based activities such as information access, scheduling and electronic mail, but such activities assume a readily ac-

cessible environment to attach to.

Interconnection makes PCs useful

In fact, it is the new availability of interconnected environments — urged on by the economics of less expensive, easier-to-use, and more useful local-area networks and departmental processors — which will make PCs useful to those who do not have their own high-productivity applications as secretaries, clerical workers and lower level professionals more often do.

Of course, we could solve the dark screen problem in other ways:

- Give out "tickets" to users who don't have their workstation turned on (and used) an adequate number of hours per day. And perhaps we could have a traffic cop to remove PCs (precipitously and in the dark of the night, of course) that accumulate too many nonuse tickets.

- Think of other uses for a PC. How many times have you noticed a PC covered with notes? Even people who don't have their PCs turned on all the time may use them often enough in small spurts to make them one of the best places to leave a message.

Maybe it's time for us to admit that the usefulness to the organization of being able to give all workers useful information access and communication devices will far exceed the cost of these devices. Some of our clients in the information-intensive industries already see it that way — and their competitors will ignore this at their peril.

Legislation, litigation threaten health of U.S. chip industry

According to a report in the May 11th *Japan Times* (dispatched from Washington, D.C., by the Associated Press), Rep. Les AuCoin of Oregon introduced a resolution in the U.S. House of Representatives calling upon Japan to open its markets to American manufacturers of semiconductors.

It should come as no surprise that those politicians most vociferous on the chip-trade issue represent areas with unusually large voting blocks working in local semiconductor plants; for example, Intel Corp. is in AuCoin's district.

To nullify the doubtless unwarranted allegations of those of us inclined to be cynical of AuCoin's motives, he says that he introduced the resolution for the sake of our Japanese friends: They might suffer the ill effects of growing American protectionist sentiment if the U.S. legislature doesn't force Japan to open her marketplace.

Industry converted to a battleground

From where I sit, it appears that the semiconductor industry is being converted to a battleground by the

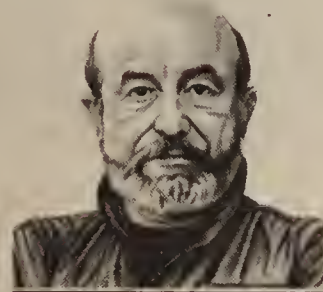
U.S.' overpopulated community of politicians and lawyers. This is particularly unfortunate since the industry is problem ridden anyway. Given an industry that is cyclic in nature, incredibly competitive and as cash intensive as any, no U.S. manufacturer of chips has managed to survive without a built-in marketplace for its products or some form of governmental subsidy. As if this weren't enough, our chip industry is now plagued by a growing storm of litigation; charges of "unfair" now filling legislative committee halls like never before.

Falling on us is a blizzard of charges and countercharges of patent infringements, failure to perform and all the other stuff lawyers write to show that they mean to win something whatever the cost to their clientele.

Fanning the fires of discontent in both the Japanese and U.S. chip industries are the various industry associations and trade organizations like Japan's Ministry of Trade and Industry, the U.S. Commerce Department, the Semiconductor Industry Association, the Electronics Industry Association (EIA) and the Electronics Industry Association of Japan (EIAJ), to name a few of the most im-

portant. Their propaganda mills work day and night to ensure that the "just" causes of their constituencies be properly acknowledged.

For example, in November 1985, the EIAJ countered charges by our EIA that Japanese firms controlled far more of the U.S. marketplace than U.S. firms did of Japan's marketplace. EIAJ said this wasn't true because U.S. firms had 19.1% of the Japanese marketplace, whereas Japanese firms had 9.6% of the U.S. marketplace. EIA said EIAJ's figures were wrong, citing 17% and 11% (respectively) as the true numbers.



By CHARLES P. LECHT

Throwing these numbers around cannot have much meaning without other key facts like the nature and size of the marketplace, facts that are themselves too often misunderstood.

Meanwhile, Intel is suing Nippon Electric Co. (NEC) for patent infringement. NEC is suing Texas Instruments, Inc. as is Toshiba. TI is suing one Korean and eight Japanese companies. National Semiconductor Corp. is suing Linear Technology Corp., which is countersuing National Semiconductor. Hyundai Electronics, Hyundai Electronics America and

Hyundai Heavy Industries are suing Inmos Co. and attempting to drag their British owners, Thorn EMI Ltd. and Inmos International Ltd., into the fray.

At least 25 combatants

At last count, I tallied at least 25 industry combatants, many of which are engaged in "batched" (several companies teamed up against one or more opponents) actions against one another. If you count the number of suits by the number of companies that are involved without regard to batching, the number is in the hundreds. If you then include the blockbuster suits launched by the various trade organizations in one country, notably the U.S., against one or more companies on foreign soil, notably Japan, this number reaches the thousand mark.

If you can distill right from wrong in this entanglement, you may be a candidate for a Nobel laureate in metaphysical economics. There is little doubt in my mind that the entire mess has its origin in the legal and political communities of the countries involved.

Capital intensive as any may be, the chip industry can hardly afford this, and it is my forecast that many companies involved in litigation may be forced into capitulation, leeches of their last funds not by their adversaries but by their own lawyers.

Lecht is chairman of Lecht Sciences, Inc., a New York-based think tank specializing in computer technologies. He divides his time between Tokyo and New York.



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COMMUNICATIONS



DATA STREAM
Walter Ulrich

Thriving after divestiture

Ever since divestiture, many companies have been complaining more and more about their communications systems. Telephone calls are cut off, and the transmission is poor. No one vendor accepts responsibility when problems arise. Products from different vendors just do not work together. The corporate communications bill is getting bigger and bigger.

To quote Shakespeare, "The fault, dear Brutus, is not in our stars, but in ourselves." Any change creates confusion. Now that companies can no longer turn to one vendor to solve their problems, planning and managing communications is hard work — harder than it has ever been before.

However, the hard work is well justified. The choices are complex, but in choice there is opportunity. With the help of new communications technologies and products, companies are finding ways to optimize their communications while minimizing their costs. They are solving problems they could not even address before.

The following management actions must be taken in order for a company to profit rather than suffer from the complex, competitive postdivestiture communications environment:

- Review and re-engineer your communications environment periodically. The quality and price of products, services and facilities are changing rapidly. An annual analysis is warranted in most companies to minimize costs and optimize performance.

See **THRIVING** page 24

Ulrich is president of Houston-based consulting firm Walter Ulrich Consulting.

Satellite links extended through terrestrial network

By Rosemary Hamilton

CHICAGO — Satellite Broadcast Network (SBN), which markets a C-band satellite service, recently introduced a second communications service that combines both satellite and terrestrial communications and will be offered as either a C-band or Ku-band system.

SBN plans to offer both the broadcast service as well as the associated hardware. Customers will pay a one-time fee for the hardware and monthly fees for both network management and data transmission.

"Two-way satellite is so, so expensive," said Madeleine Sayer, SBN general manager. "With terrestrial return, it turns out to be real cheap." She said the system targets companies that cannot afford or do not require a two-way satellite system but do have multiple sites to which they regularly transmit data.

The system includes a communications processor, designed by Intelligent Communications Networks, Inc., (Incomnet) that

can be used to build either local- or wide-area networks or a combination of the two. The Incomnet portion of the network enables customers to distribute on a local or regional basis documents or other transmissions received from the satellite portion of the network.

Customers typically use ordinary dial-up telephone lines to send the documents to SBN's earth station, so they can be transmitted via satellite to multiple company sites, Sayer said.

SBN's offering was designed for "companies that send 80% of their data one way, only 10% the other — a company sending new price lists or inventory to a number of stores, for example, or memos sent out from corporate headquarters." Recipients usually only have to transmit back to the central site in order to send either an acknowledgment, or a request for a specific report, according to Sayer.

"One of our customers, an insurance

See **SATELLITE** page 23

LAN limits classified data access

Verdix claims multilevel security an industry first

By Mitch Betts

WASHINGTON, D.C. — Verdix Corp. of Chantilly, Va., recently unveiled the industry's first multilevel, secure local-area network designed for the transmission of sensitive or classified information over an Ethernet/IEEE 802.3 network.

The Verdix Secure Local Area Network (VSLAN), announced at a military electronics show held in Washington, D.C., targets government agencies, defense contractors and large corporations, according to George Cowan, Verdix president and chief executive officer.

"The need to protect personnel, engineering, payroll, financial, legal or other types of information is as vital to the via-

bility and integrity of a commercial organization as the protection of classified information to national security," Cowan said.

VSLAN is a series of products that provide multiple security levels to ensure that sensitive data can be sent or received over an Ethernet-based local-area network by authorized users only, Verdix said.

The Network Security Center is a dedicated workstation that offers centralized management of the network's security system. The center monitors the entire network, tracks activations and initializations and notifies the operator of attempted security violations by an alarm. It enables the network security officer to establish secure paths between nodes and perform other control functions.

The Network Security Device is a board-level product that implements multilevel

See **LAN** page 24

INSIDE

MCI slashes its rates to undercut AT&T/23

NEW THIS WEEK

- Software AG offers two network management products
- IBM introduces a series of modems

■ For more on these and other new products, see pp. 115-128.

INSTANT ANALYSIS

"A few years ago, we used to joke that SNA meant Shall Not Attach. It's clear now it stands for Shall Not Abandon."

— Michael Zisman, CEO, Soft-Switch, Inc., at the recent Kutnick/Wohl office automation forum

Ex-NSA director gets open standards group off ground

Faurer to play role of liaison, chief negotiator

By Mitch Betts

The new man at the helm of Corporation for Open Systems (COS), President and Chief Executive Officer Lincoln D. Faurer, has signed up for the job of steering the fledgling organization through the major staff hiring and recruitment efforts that he says should get COS "up to full strength" by year end.

COS is a consortium of vendors and users dedicated to fostering industry acceptance of communications standards and developing testing services to assure product conformance. In a recent interview,

Faurer spoke of the goals of COS and his own role.

Faurer attained the rank of lieutenant general in the U.S. Air Force, held a senior position in the North Atlantic Treaty Organization (NATO) and was most recently the director of the National Security Agency (NSA).

CW: What part of your background will be most relevant and useful to COS?

FAURER: I think the experience I gained both in NATO and as the director of NSA, interacting with a number of senior-level officials who hold disparate views and managing to seek consensus and compromise solutions, creates a parallel to the kind of situation I'm going to face here.

CW: What do you see as the role of the president of COS: government liaison, staff director, chief negotiator, public persona?

FAURER: I think my role is probably most of what you said. It's a management position in which I'll be keeping the corporate entities of our group happy and feeling that they are getting a return on their investment, interacting with bodies with related purposes such as the National Bureau of Standards and other standards bodies and overseeing the structure here. Once we get started, I'll be relying on a vice-president for technical matters.

CW: Do you think you'll be doing a lot of negotiating with vendors?

FAURER: We have all signed up to a

common purpose, but when one starts to follow that purpose through — with the creation of testing capabilities to evaluate products and the selection and development of standards and the certification of products — all of these steps are going to require what you might refer to as negotiation. I suspect that, with as many different companies as we have, we are going to have several different views of what is the right answer at each of those junctures.

CW: What are the big challenges for COS?

FAURER: The big challenge is making this large consortium, which hopefully will become even larger, function in a harmonious way. It has the

See **STANDARDS** page 23

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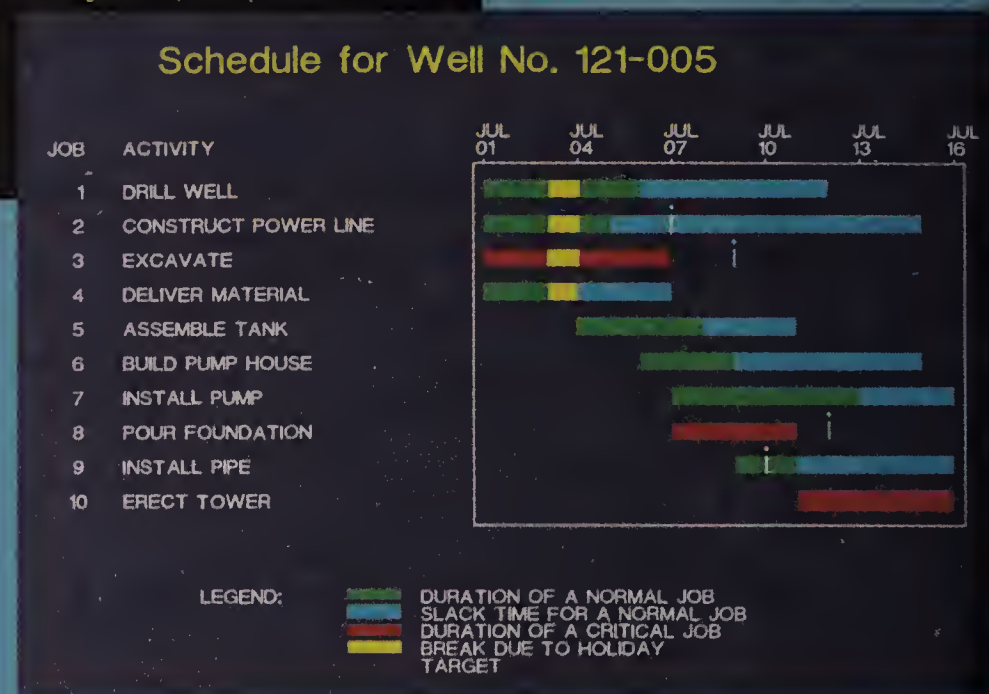
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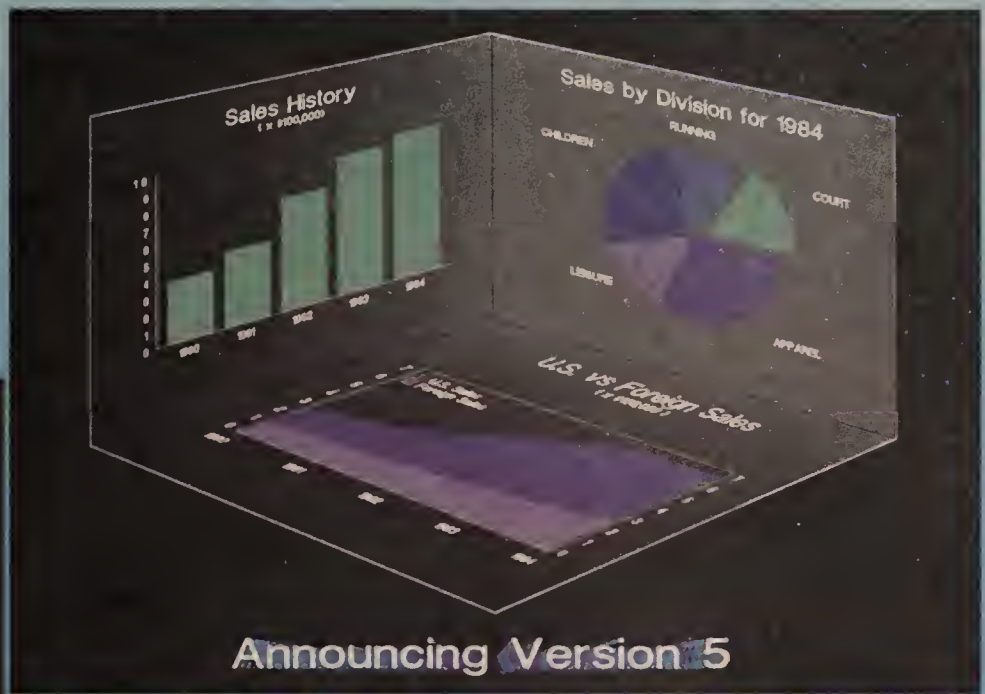
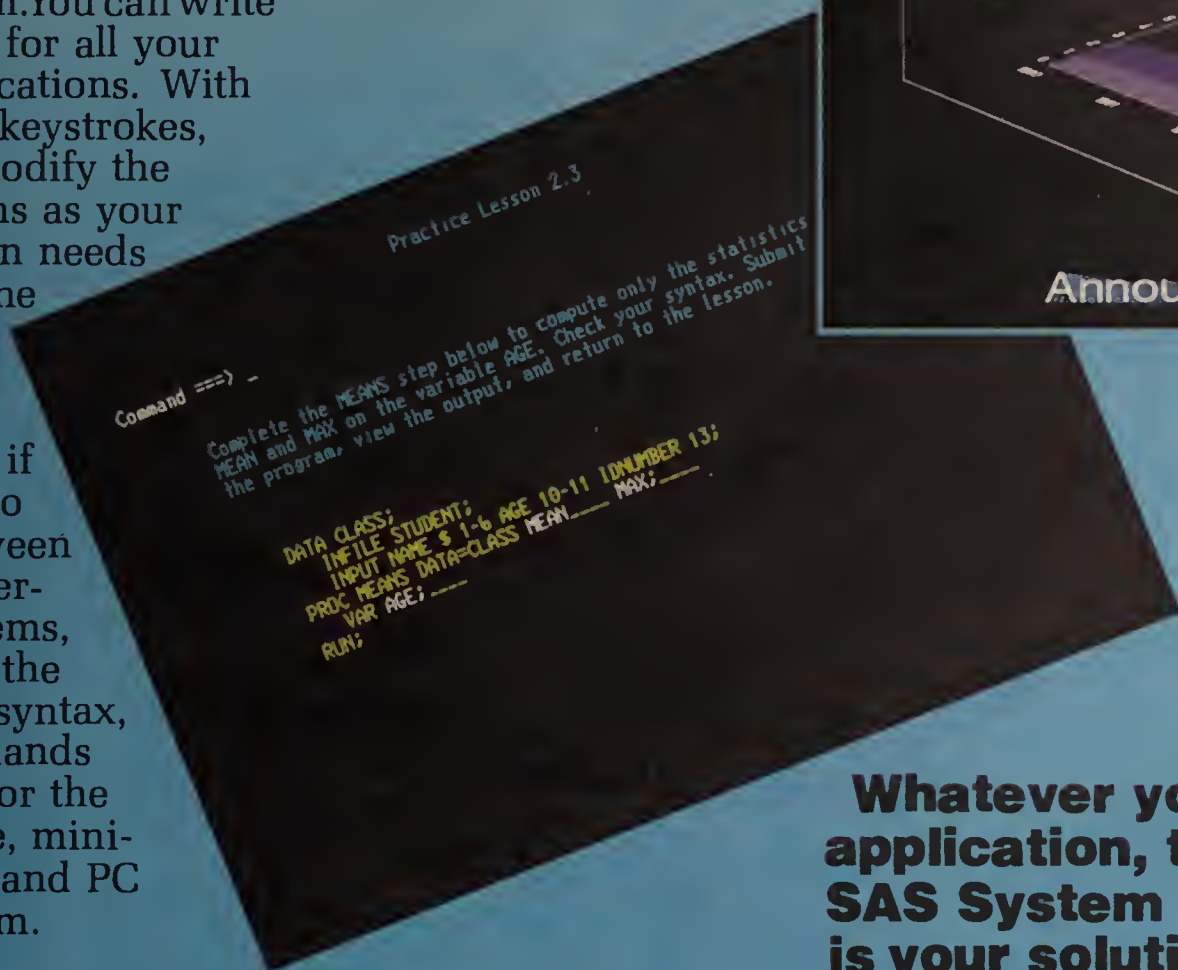
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Investment Hot Spots

U.S. companies invested \$226.1 billion in foreign operations in 1983. The largest investment dollars were attracted to these areas:

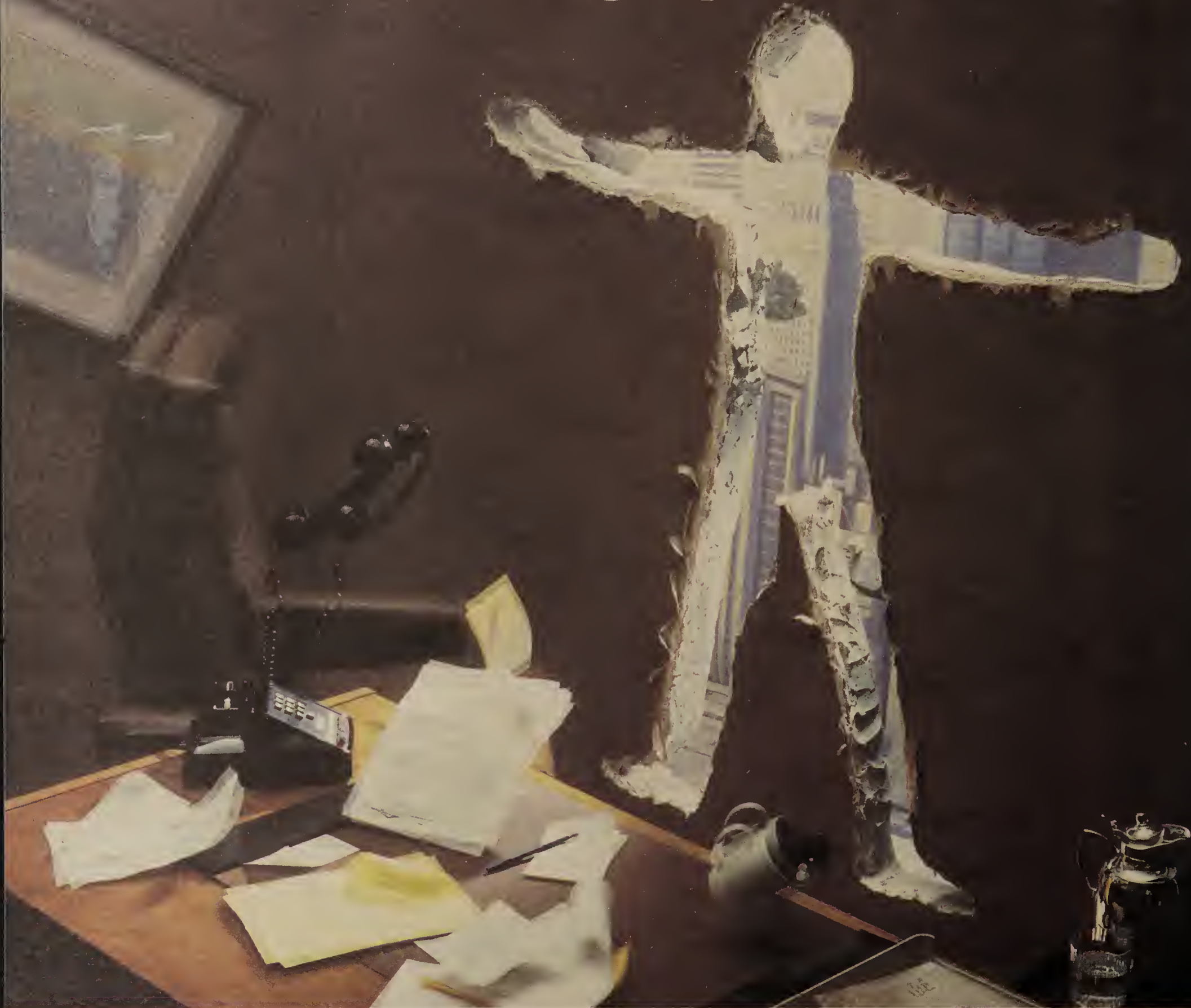


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It's going to take several months to get through the start-up phase. I hope to actually see the first employees walk in the door here between now and summer, and we should be close to full strength by the end of the year.

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COMMUNICATIONS

Thriving after divestiture

From page 19

Network costs increase rapidly whenever networks get out of phase with changing costs or traffic patterns. Sometimes the cost per communications unit can be used as a measure of optimization; normally, it will improve with each successive optimization.

- Focus on network control. Intelligent planning depends on a solid base of reliable data that network control can provide.

Effective network control and monitoring address the problems that most frustrate end users, such as unwanted disconnects, poor trans-

mission quality and degrading transmission rates. With good control, changes can be instituted more quickly, problems solved faster and service improved.

- Consider several vendors when making a major procurement. Not only does this offer a broader spectrum of solutions, but also simple human nature dictates that suppliers will be more attentive, flexible and cost-conscious in a competitive situation.

The judicious mixing and matching of different vendors' products always gives better price/performance.

One of Walter Ulrich Consulting's clients had a proposal from its preferred vendor on a telecommunications system last year. We encouraged the company to consider competitive proposals.

By doing so, they saved 20% and got a system better suited to their requirements.

In a current case we are looking at, the proposal from an incumbent vendor is \$1 million higher than the lowest price proposal.

- Write off communications hardware rapidly. Telephone equipment used to be amortized with the building.

Today, seven years is too long a depreciation period, and equipment often is obsolete in three years. Realistic estimates of a system's useful life must be made.

We have known communications managers whose proposals for new equipment were rejected because the financial people did not want to write off the remaining book value of the old equipment. Faster depreciation now will allow timely replace-

ment in the future.

- Last but certainly not least, communications strategic plans must be documented and well thought out. Operational decisions must be made within an overall framework.

Each purchase should leverage on previous decisions and build toward future objectives.

Many companies failed to prepare a long-term technology plan in 1984. We look at those companies today and lament the waste that was caused by incompatible equipment, dead ends and prematurely obsolete systems.

Companies without plans are always tearing down their solutions and starting over.

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NCR

LAN limits access to classified data

From page 19

security on IBM Personal Computer and Multibus network connections. It also provides protocol conversion for communication between different types of devices.

The Secure LAN Interface Unit is a communications server that links computers and terminals to the network via an RS-232 port connection. It performs the same security functions as the Network Security Device.

The types of security implemented by the above products are as follows:

- Encryption of each network packet is accomplished before it is transmitted over the network according to the specifications of the Data Encryption Standard (DES) developed by the National Bureau of Standards. Communications between users and the Network Security Center are also encrypted.

- Datakey is a physical device that the user inserts in a Network Security Device in order to gain access to the network. The Datakey enters a code, which is then sent to the center for authorization.

- Security windows, which define what type of data can be received and transmitted by a given user, are created by the security operator on the Network Security Center and downloaded to each security device.

The vendor said VSLAN will be formally evaluated by the National Computer Security Center in 1987 and is targeted for an A-1 rating, the highest security classification established by U.S. Department of Defense Trusted Computer System Evaluation Criteria.

The product will be available for product shipments by the end of this year, after beta-site testing in the late fall, according to Gaurang Shah, manager of secure products marketing at Verdex. He said the Network Security Center costs \$20,000, and the Network Security Device costs \$5,150.

Verdex is a 4-year-old company specializing in hardware and software products serving government and industry needs for Ada language development systems and computer security.

VSLAN is the first offering in a forthcoming family of related security products, officials said.

MICROCOMPUTERS



SMALL TALK
Eric Bender

Users must take OA reins

“What do users really want today? A personal computer that acts like a mini, that hides in a closet, that gives them everything they want but that they don't have to manage as a DP resource.”

Dream on, suggested Dale Kutnick of the Gartner Group, Inc.

Speaking late last month at a Boston conference he co-sponsored with Amy Wohl of Wohl Associates, Kutnick warned against that kind of expectation, arguing that customers must grit their teeth and overcome office automation hurdles themselves.

“Users are going to have to take more charge of their own departments,” Kutnick said. “Otherwise MIS is going to do it, and it will all drag out longer and longer. . . . MIS simply has too much to do to run the corporation.”

As office systems initiatives stall at many firms, “I think the users are almost as much at fault as vendors,” Kutnick continued. “Users wanted PCs, and that's what they got, and they kind of abrogated their responsibilities.”

“Users need to start thinking about making investments, and vendors need to be more open with users about how they're going to make the investments pay off,” he added.

This suggestion struck a nerve with the vendors present at the conference, who responded with predictable enthusiasm about risking their competitive advantages. But they made a more striking point — why should they tell their customers more than their cus-

See **USERS** page 28

Bender is Computerworld's senior editor, microcomputers.

Multimate packages axed

Ashton-Tate drops low-end tools; mini software on hold

By Douglas Barney

EAST HARTFORD, Conn. — Since the acquisition of Multimate International Corp. by Ashton-Tate in December 1985, two low-end Multimate products have been quietly dropped. And development of word processing software for mini and mainframe computers, which Ashton-Tate executives had questioned before the formal completion of the buyout, has been put on hold.

Both the Just Write and Multimate Executive word processing packages were discontinued in the first quarter of 1986, said Lydia Dobyns, director of integrated and word processing product marketing for Ashton-Tate. Ashton-Tate discontinued Just Write as a result of disappointing sales, which Dobyns attributed to a lack of resources to promote the product.

Multimate Executive was successful as a promotional vehicle to interest executives in Multimate's more powerful packages, Dobyns said, but like Just Write, its sales were disappointing and the product discontinued. “We will continue to consid-

er the low-end market,” Dobyns said. Neither product was sold or licensed to another firm.

The development of Multimate word processing for minicomputers, especially the IBM System/36, and for mainframes, an effort that was widely publicized last year prior to the acquisition, has essentially been put on hold while Ashton-Tate reviews the need for such products.

The firm, however, has yet to formally announce that development of these products has ceased due to the acquisition and to changes in the minicomputer market. Under the original Multimate plan, the first of these products was to ship by the start of 1986. “The whole area of mini and mainframe development efforts is under serious consideration. IBM has confused the issue with changes to the System/36 and 38 and the introduction of the Personal Computer RT,” Dobyns said.

Another factor in Ashton-Tate's decision is that customers realized that Multimate software will not perform as well in a shared processor environment. “The demand begins to weaken when you talk about what performance will be like,” Dobyns said.

“The best technical analysis that we See **MULTIMATE** page 30

Gridcase gets discount, interface

By David Bright

MOUNTAIN VIEW, Calif. — Responding to increased competition in the laptop computer market, Grid Systems Corp. last week cut prices on its Gridcase laptops and announced an IBM Personal Computer-compatible expansion interface option.

The price reductions on the Microsoft Corp. MS-DOS-based systems range from 17.5% to 28%.

Grid President Samuel Wiegand said that “manufacturing economies” and an effort to respond competitively to the rapidly growing laptop market are behind the pricing changes.

In the past two months, both IBM and Data General Corp. have introduced laptop computers with respective starting prices

of \$1,995 and \$1,795.

Later this year, Wang Laboratories, Inc. and possibly AT&T and Compaq Computer Corp. are also expected to release laptops.

According to the vendor, the price of the Gridcase2 with a recently enhanced yellow LCD has been reduced from \$3,150 to \$2,595. The company's most popular model — Gridcase3, outfitted with a gas plasma display — has been reduced in price from \$4,350 to \$3,125.

Priced at \$325, the expansion interface option enables Gridcase systems to connect to a standard IBM PC expansion chassis and take advantage of third-party hardware cards. It also gives the systems the ability to connect to local-area networks and mainframes.

INSIDE

Blyth Software upgrades Omnis data base manager for Macintosh with new macro commands/**26**

Symantec plans corporate licensing program for Q&A package/**30**

NEW THIS WEEK

- Unipress Software ports Lattice C cross compiler to AT&T PC 6300
- Pansophic Systems offers Easytrieve Plus PC DBMS for IBM compatibles

■ For more on these and other new products, see pp. 115-128.

INSTANT ANALYSIS

“I don't see APPC taking off until the 640K-byte barrier is broken. On an 8088, where are you going to put it?”

— Dale Kutnick, executive vice-president for research, the Gartner Group, Inc.

Micropro enhances low-end word processor, drops price

Easy Extra includes mail-merge, labeling

By Peggy Watt

SAN RAFAEL, Calif. — Micropro International Corp. has added mail-merge and label-printing functions to an upgrade of its low-end Easy word processor, which is available for the original \$149 price. The firm also will sell Version 1.5 of the word processor alone for \$99.

The new combined package, called Easy Extra, runs on the IBM Personal Computer and compatible systems and is scheduled to be available in June.

Easy Extra includes a predesigned data base form suitable for mailing lists and labels. Besides such common

fields as name, title, address, telephone numbers and several fields for notes, each data base can hold up to eight subsets. Easy Extra can manage as many as 750 records on a floppy disk system and 32,000 records on a hard disk.

Easy Extra was first demonstrated at Comdex/Fall '85 as Easymail, a companion product to Easy. It was scheduled for release earlier this year, but the company decided not to ship it separately and hopes instead to boost Easy sales with the enhanced product.

Easy Release 1.5, which requires 256K bytes of random-access memory, offers faster cursor speed and more complete paragraph reformatting, said Fritz Feiten, product manager. It also provides fail-safe methods of saving data when a disk is full

— the system monitors disk space and beeps a warning when it nears full, and even stops and saves the file when no more data can fit.

Easy can now read Lotus Development Corp. spreadsheet files directly. However, data from another format cannot be merged into the Easy Extra data base, because Easy Extra is intended as a starter data base from which a user might graduate to a more powerful manager, Feiten said.

Micropro also offers a \$25 utility to convert files to its Wordstar 2000 and IBM Document Content Architecture formats. The program also supports the IBM 3270 Personal Computer, Enhanced Graphics Adapter and Professional Graphics Adapter.

The Easy spelling checker has also been enhanced, to include 87,000 words, up from 65,000 in the original

dictionary. The spelling checker offers alternative spellings, and a word can be changed with one keystroke.

Easy program now supports more than 240 printers, twice the number supported by the original release.

Feiten said Micropro aims Easy at current and prospective users of Software Publishing Corp.'s PFS:Write and of IBM's Writing Assistant, a modified version of PFS:Write.

Easy was first released last August as the third in Micropro's stepping-stone line-up of word processing programs. Wordstar, the flagship product, is now positioned as the mid-range package, and Wordstar 2000 targets high-end users.

Easy upgrades are being automatically sent free of charge to all registered users.

MICROCOMPUTERS

Blyth Software upgrades Omnis, offers Mac font support

Includes tutorial, frequent data saves

By Peggy Watt

SAN MATEO, Calif. — Blyth Software, Inc. has introduced an upgrade to its Omnis data base management program that features full support of Apple Com-

puter, Inc. Macintosh fonts, extensive macros, immediate saving of records to disk and a new tutorial package.

Available now, Omnis 3 Plus is the latest version of the Omnis data base, originally introduced in 1982 for the Apple II and first made available for the Macintosh in 1984. The new release runs on all versions of Ap-

ple's Macintosh, including the 6-month-old Macintosh Plus.

Cost of a single-user version remains at \$495. The multiuser version is available for several Macintosh local-area networks, including the Corvus Systems, Inc. Omninet, Sunol Systems Co.'s Sun Disk Server with AppleTalk and 3Com Corp.'s 3Serv-

er under Ethermac or other Ethernet networks. Prices range from \$990 for fewer than five users to \$2,995 for 64 users.

More than 60 new commands

With Omnis' newest version the data base designer has more than 60 new macro commands to enter field data or output. Also new are time

fields with time-arithmetic, multiline linked-text fields with word wrap as well as the ability to create scroll boxes. Through the use of macros, the user can bypass the Macintosh desktop and go directly to other Macintosh programs through a pop-up menu.

Additionally, a single data base record can now contain multiple fonts and font sizes and any fonts that are available on the Macintosh system in use.

The Omnis 3 Plus system automatically saves to disk each record as it is entered without going through the Save procedure in a Macintosh pull-down menu.

'Resilient and robust'

"It's supposed to be resilient and robust against data damage, the same way you have protection on a mainframe, so that when you see it's done on the screen it's done on the data base disk," says Jeff Galvin, Blyth vice-president of sales.

He says the method is not a memory cache, but a fast Save algorithm that writes records and indexes immediately when the user hits Return to signify data entry is complete.

Omnis 3 Plus' manual includes both a tutorial and a reference manual. The tutorial was added particularly for use in corporations, in which in-house developers often create vertical operations with Omnis, a spokeswoman said.

Variety of users

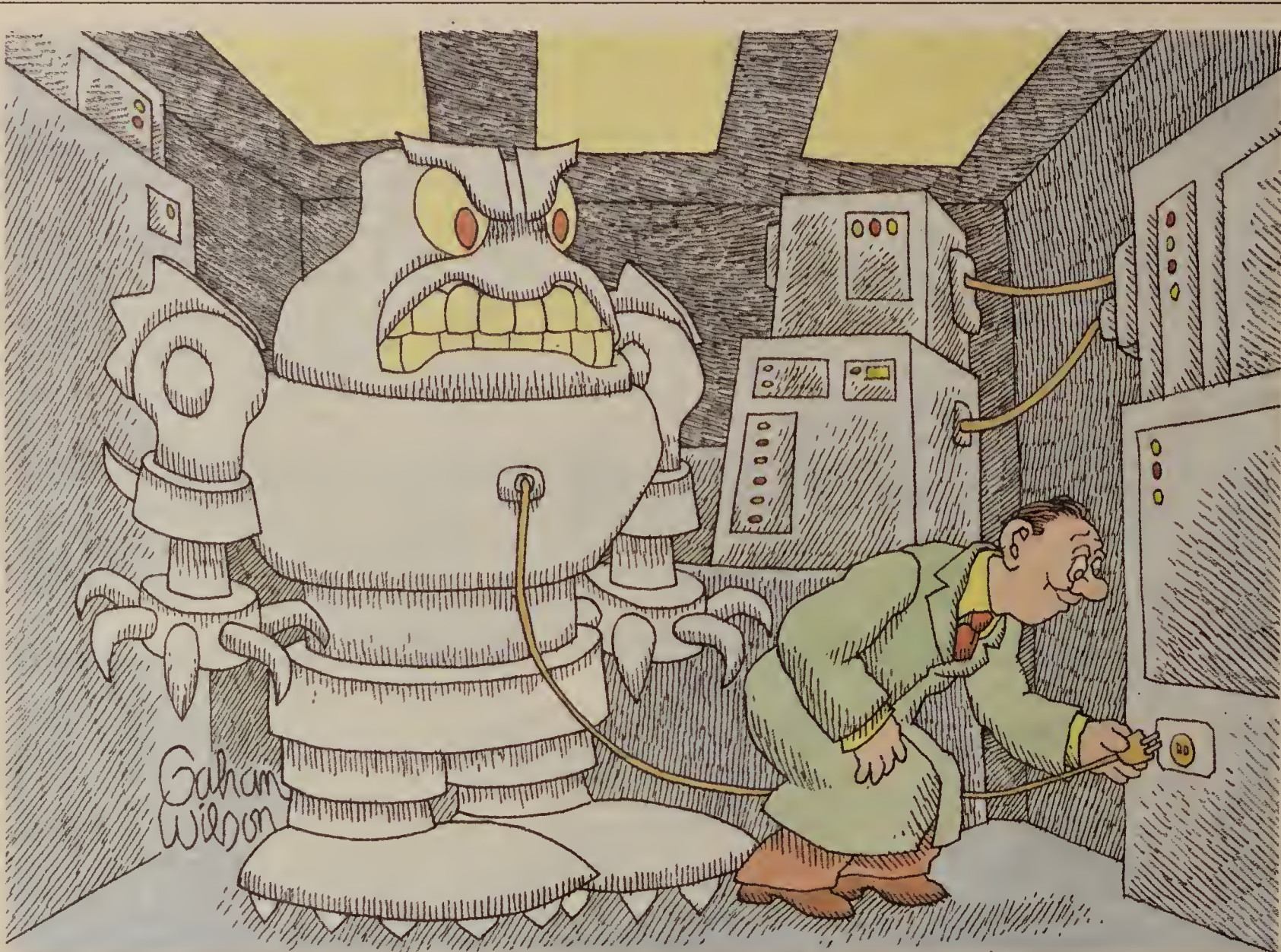
Omnis users range from corporate developers and individual users to independent developers who design specific data bases for value-added systems, she said.

While Blyth does not offer a standard site-licensing program, it negotiates such contracts with corporations that prefer volume purchase and special arrangements for support and upgrades.

The program is copy protected but requests the insertion of a key disk randomly — often only once in several dozen times it is run, Galvin said. However, once the original disk is requested, the program will not run, even after a restart, until the disk is inserted.

The upgrade is free of charge to all registered owners who purchased Omnis 3 after April 15. They will also receive a disk of sample applications for the data base, including models for setting up data bases of accounts receivable, inventory control, personnel management and time/cost recording.

Users who registered Omnis 3 before April 15 can obtain an upgrade to Omnis 3 Plus for \$49.50 until Aug. 31.



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COMPUTERWORLD

29

SOFTWARE & SERVICES

Prototyping, ADS/Online join to triple productivity

AT&T Communications speeds development process

By Charles Babcock

CINCINNATI — DP managers at AT&T Communications say they have made productivity gains of three to one by using application prototyping in combination with the Cullinet Software, Inc. ADS/Online development language.

Tripling the productivity rate was the average gain for 15 communications applications developed over the last 18 months, says Richard K. Aeh, district manager for AT&T Communications' data center in Cincinnati. In some cases applications were developed twice as fast, while in other cases they were created five times as fast.

In addition to the 15 applications now in production, another 16 have been developed using both prototyping and Cullinet's development language, and while AT&T has not done a quantitative analysis of the

productivity gain, Aeh thinks the three-to-one average applies to them as well.

"Prototyping really works. The feasibility study, definition and preliminary design are collapsed into a single step," Aeh says.

It is like building "a straw man," he adds. "You put a series of screens up there that helps people focus on how the application will run."

AT&T Communications set a productivity increase of 30% as the minimum needed to justify retraining and the expense of the new tools. To see if it met that criterion, Aeh's department used a procedure recommended by IBM, function point analysis, to measure its gains.

Function point analysis attempts to define standard transactions and business functions within an application and record how long it takes to program them, explains Roger A. Krantz, manager of information management at the Cincinnati center. While there is no one definition of

See **PROTOTYPING** page 30

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The leader in information services and technology

MICROCOMPUTERS

Users must take OA reins

From page 25

tomers tell them?

"Very few users are willing to describe what they're going to do with all their equipment," commented Ralph DeMent, Digital Equipment Corp.'s manager of strategic planning for distributed systems engineering. That leaves a gap vendors can't always be expected to fill in smoothly.

Wohl agreed, noting that at one recent forum where artificial intelligence applications were being banded about, 100 end-user companies working on such packages were represented, and "zero were willing to discuss their application."

Other vendors cited cases in which customers discussed their needs and just got them wrong or demanded products prematurely.

Take IBM's Distributed Office Support System (Disoss), suggested Michael Zisman, chief executive officer of Soft-Switch, Inc. Competitors like Wang went to their users, who said that Disoss sounded nice and that maybe they would need it. So Wang and others plowed into implementations — but the customers had never really nailed down justifications for their requests.

Not surprisingly, Disoss was the target of a few other potshots at the conference. "It's creating a new category for de facto standards — one that doesn't require a significant installed base," Kutnick remarked.

Zisman found other curiosities in the nitty-gritty of document exchange below Disoss, particularly in Document Content Architecture (DCA). While micro word processor developers and everyone else have busily piled onto the DCA train, that train may derail at unexpected intervals, he maintained.

Document definition "has to be precise, and it has to be robust," he said. "DCA is neither. You can't have three ways of underlining, but DCA does."

No office automation conference is complete without a little genteel IBM-bashing, and Big Blue's mid-range systems got the most attention, with various predictions for

how System/36 and 38 architectures might converge.

Lewis Crawford, IBM's manager of office systems strategic planning, noted that IBM has shipped its 100,000th System/36. But he acknowledged that "performance on the 36 has been a problem. . . . You can expect significant performance increases by the end of the year."

As always at office automation sessions, the subject of networks could not be escaped. "The key today is the cost of the environment you start to create when you run wire out through the building," remarked David Mahoney, president of Banyan Systems, Inc.

"The biggest problem with workstations today is that they are too expensive," said DEC's DeMent. He declared that those who think IBM Personal Computer-style nodes priced at \$5,000 (not counting all the associated software and support costs) are appropriate "are really going in the wrong direction."

Lastly, the Wohl/Kutnick meeting displayed a resurgence of interest in end-user interfaces that go well beyond Apple Computer, Inc.'s Macintosh.

John Butler, marketing vice-president at Applix, Inc., pointed toward "changes in user interface that allow you to treat anything on the screen as an object you can point to and manipulate. That's really a more profound concept than pointing at a little picture on the screen."

Butler also outlined a long, tough march toward an object-oriented document architecture that permits users to edit all graphics in the same way, regardless of what kind of screen and machine they're working with.

So what will these new interfaces give us? Everyone's standard word processing will begin to evolve into something better designed for communication — something now traveling mostly under the name of desktop publishing, Butler said. (Does anyone but Apple really like that term?)

And while the industry is now concentrating on the what-you-see-is-what-you-get features of early desktop publishing software, more important are changes in the user interface that will make text and graphics much more accessible for nonsecretarial users, he maintained.

Versasoft revs up DBman

Dbase compatible gets 'assist' pull-down menus

By Douglas Barney

SAN JOSE, Calif. — Versasoft last week unveiled DBman 2.1, a faster version of its DBman data base software, scheduled for release later this month. The company also cut the price of the product nearly in half.

The network version of DBman costs \$695 total, and a single-user version goes for \$295. Both versions include the DBman runtime package.

Although the firm has not completed benchmarks, both the performance and user interface of DBman have been improved, according to Richard Post, vice-president of sales and marketing.

DBman was designed for compatibility with Ashton-Tate's Dbase III Plus and, like Ashton-Tate's product, provides a new "assist" front end with pull-down menus. "You can do operations without having to specifically know the command needed to do it," Post said. DBman also allows developers to create menus.

In addition, the product can use up to 640K bytes of random-access memory (RAM) for the caching of program files and data. "Previously you couldn't use additional memory that was available," Post said. "Now it will go out and use up to 640K bytes that are available for any open data

base files, or index files, or for command and procedure files. Previously you had to go to disk for every single command that executed, and that slows things down quite a bit."

DBman, which now includes more global memory variables, can handle 128 fields and 4,000 bytes per record and will support up to 2 billion records per data base. The package runs on local-area networks such as the IBM PC Network and Novell, Inc. Netware and is 90% compatible with Dbase III Plus, according to Post.

"The data base files themselves are not compatible; there is a built-in convert command to convert from their format to ours," Post said. Versasoft chose not to use the Dbase file format "because it is incredibly slow," he remarked. Versasoft claims its product runs up to 40 times faster than Dbase when adding records.

Post noted that the new DBman prices of \$695 for a network version and \$295 for a single-user version represent dramatic cost-cutting.

"The multiuser interpreter retailed for \$1,100 previously. The runtime package as a separate unit was \$350, and we charged a \$150 license fee per network but never charged a per-user fee on the network like Ashton-Tate does."

Existing customers can upgrade for \$25 for the single-user and network versions. DBman runs on IBM Personal Computers and compatibles with at least 270K bytes of RAM.

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MICROCOMPUTERS

Symantec to lure corporate market with Q&A site licensing

By Peggy Watt

CUPERTINO, Calif. — This summer Symantec Corp. is scheduled to launch a site-licensing and corporate support program for Q&A, its natural language data base and word processing package, as part of a major push for the corporate market.

Symantec also is shifting its sales focus from general

retail to direct corporate operations so that by the end of the year, 80% of the sales force will be aimed at corporate customers, says Rod Turner, executive vice-president for marketing and sales. "But we're still leveraging off our retailers," who will be involved in corporate purchases when possible, he adds.

Q&A's price tag will also go up on July 15, to \$349 from \$299. Symantec maintained the original price when it released an upgrade just two months after the product's introduction. Turner says the price hike reflects an unusual trend by some dealers to sell the package at more than the suggested retail price.

Each package includes a coupon for a \$50 discount on the Turner-Hall Card, a \$99.95 half-slot memory board with clock, calendar, random-access memory disk and print spooler capabilities, produced by Turner-Hall Publishing, a Symantec division.

Turner says total sales have grown 10% to 15% each

month. Since January, Q&A has been among the eight top-selling products from Softsel, Symantec's only distributor.

Symantec's site-licensing program will be similar to the Ashton-Tate program of offering several levels of support for sliding fees, with options for methods of making and distributing copies and documentation.

Symantec selectively seeded copies of Q&A in corporations for evaluation, and eight months after its introduction, that tactic is beginning to pay off.

Among Q&A's first buyers, 95% are small business owners and professionals. Corporate users now account for 25%, and Turner expects that share will rise to 50% or 60%.

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Multimate line gets ax

From page 25

have done, using Multimate people as well as our own, shows that the System/36 is pretty underpowered for interactive word processing," said Roy E. Folk, Ashton-Tate's executive vice-president of marketing and strategic planning, in an interview earlier this year.

"An important component in what customers want from the System/36 implementation is Document Content Architecture compatibility. A sensible degree of compatibility, as I can understand it, would be to be able to write files on a micro that could be transferred and read by various document processing software packages on the minis and mainframes," Folk said.

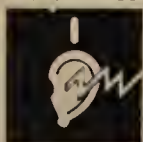
Development of Multimate software versions for Unix, a popular operating system for supermicrocomputers, is under consideration, Dobyns said, declining to elaborate.

For now, Ashton-Tate will focus on networking versions of Multimate software, rather than porting its software to larger systems. As part of that effort, the firm said in May that it is shipping its local-area net version of Multimate 3.60, its most advanced word processing package.

There are three versions of Multimate 3.60: one for the IBM PC Network, one for Novell, Inc.'s Advanced Network/86 and Network/86 and another "universal" version for most other networks.

Though Ashton-Tate has faced stiffer competition in the word processing market, Dobyns said Multimate software sales have increased every month since December.

SOFTWARE & SERVICES



SOFTLINE
Robert Morison

Buying a 4GL: Be forewarned

As the pitfalls of implementing fourth-generation languages have become better known, some purchasers may be shying away from them on the grounds that they can't risk their potential for failure.

The accounts of backlogged updates, slow response times and possible loss of data integrity at the New Jersey Department of Motor Vehicles last fall was one case that raised such fears. In the criticism of the department that followed, I was bothered by two points:

- That vendors, even established ones with well-respected products, equivocate regarding the viability of their fourth-generation languages for large production applications.
- That consultants can sell clients on the latest technology but lack the expertise to employ the technology effectively.

Equivocal vendors plus a shortage of implementation expertise equal surprises for unwary users. If you don't adjust your methods for fourth-generation language implementation, you may be surprised not only by the speed of development but also by the speed with which the product eats your computer resources. Such surprises can and should be avoided.

Experienced practitioners have long known that fourth-generation languages must be handled carefully. Show me a fourth-generation language, an associated data base manager and a

See **BUYING** page 33

Morison is a senior associate at Index Systems, Inc., a management consulting firm on information technology in Cambridge, Mass.

RTI pioneers Ingres into distributed data territory

By Charles Babcock

Relational Technology, Inc. (RTI) is attempting to establish distributed data base management with the introduction today of a product said to allow data bases at scattered sites to be accessed as one relational data base.

Distributed data base management has been cited for years as a potential boon to large organizations, but the hindrances to retrieving data across different operating systems, machine makes and sizes in most cases have been too formidable to overcome.

RTI, the Alameda, Calif.-based producer of the Ingres relational data base management system, says it has overcome that obstacle, albeit only for large users of its Ingres DBMS and Ingres/Net network manager.

Ingres/Star "will allow application builders to build applications that span the islands of information," drawing data from Ingres data bases used on different machines and porting it to different ma-

chines, said Peter Tierney, vice-president of marketing at RTI.

Analysts reacted favorably to the product, but they cautioned that there is no established market for it. "RTI will pioneer; they're going to set the standards" for distributed data bases, according to H. Michael Braude, vice-president of the software management strategy service with the Stamford, Conn.-based Gartner Group, Inc.

George Schussel, president of Digital Consulting Associates, Inc. in Andover, Mass., noted, "Because the capability hasn't been there, there is no market for distributed data bases." But, he added, "I think there will be a big and important market in the future."

Versions of Ingres currently run under the Digital Equipment Corp.'s VMS operating system, AT&T's Unix System V and IBM's VM/CMS.

In 1983, the company brought out Ingres/Net, a data base networking product

See **RTI** page 32

INSIDE

Relational Technologies' Ingres relational DBMS gets an interface to Ada/**32**

NEW THIS WEEK

- IBM announces a building design addition to its Catia graphics design software

■ For more on this and other new products, see pp. 115-128.

INSTANT ANALYSIS

"Concomitant with a 4GL's ease of use comes ease of abuse. A 4GL allows you to both develop systems faster and screw them up faster."

— Robert Morison, senior associate, Index Systems, Inc., Cambridge, Mass.

PCS ports Pro-IV to System/36

By Eddy Goldberg

LAGUNA HILLS, Calif. — Pro Computer Sciences, Inc. (PCS) recently announced that its Pro-IV applications development system has been ported to the IBM System/36.

Pro-IV is a 10-year-old product installed in 1,200 sites worldwide, according to Lloyd D. Tanaka, marketing director.

PCS claims Pro-IV is the first fourth-generation language product for the System/36 environment. According to Tanaka, its availability will make it easier to develop applications at the departmental level where the System/36 is commonly used. An application developed on a mainframe can be transported directly to a departmental setting on a System/36 then down to the end-user's microcomputer.

PCS President Sushil Garg said a fourth-

generation language for the System/36 allows more effective control of departmental computing within corporate data processing.

The first customer for Pro-IV on the System/36 is Sellers Software Services Co. of Atlanta, which will use it to develop application programs for Bell South Advanced Systems, Inc.'s, Telecommunications Information Processing Software System.

Pro-IV is scheduled for release in July. Pricing for the System/36 Model 5360 is \$13,000 for the full development system and \$6,000 for the runtime system. For the System/36 Model 5362, the full development system is \$7,000 and the runtime version \$3,000, and for the System/36 Model 5364, the full system is \$3,500 and the runtime version \$1,500.

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The second Database Derby will be held in San Francisco during the month of August, 1986. We look forward to seeing Cullinet, ADR and the rest of the database thoroughbreds in this year's run for the roses. But we should warn them that our gold medal team for 1986 will

again include the cream of the ORACLE National Consulting Service organization.

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SOFTWARE & SERVICES

RTI pioneers Ingres

From page 31

that cut across operating systems by translating the SQL queries issued by one Ingres DBMS into SQL commands understood by Ingres on a different operating system.

Ingres/Star sits atop Ingres/Net, where it supplies a data dictionary and data management services for the network. The data dictionary keeps track of where data is located on the network, so a user may access it without having to specify its location.

A query that requires data to be retrieved from different locations is transparent to the user, who formulates the query as if the data were resident in a local data base, Tierney claimed.

"Distributed processing over a network requires that all the data requested in a query must be present on a single node. Distributed data base technology, such as Ingres/Star, removes that restriction," Tierney said.

RTI spokesmen said the firm plans to bring out a PC-DOS version of Ingres this fall and an MVS Ingres by the end of the second quarter in 1987. These will be designed to plug into Ingres/Star, add-

ing more potential sites for distributed data base management, Tierney noted.

Applications are portable across the different versions of Ingres because front-end applications are kept separate from the background data base management system and networking facilities.

Availability, pricing

Ingres/Star will be sold with Ingres/Net for the VMS and Unix operating systems at prices ranging from \$2,000 on a microcomputer to \$62,000 on a mainframe. It will be available in the fourth quarter of this year, with a second release slated

for 1987 that supports VM/CMS, MVS and PC-DOS.

Outside observers say one of the most immediate benefits of distributed data base management will be the ability to develop applications on a microcomputer that could be run on a mainframe.

Because of its use of SQL, gateways to allow Ingres/Star to access IBM's DB2 and other SQL-based relational products "will be relatively easy to do" and should be part of the second release of the product, Tierney claimed.

RTI is still developing its version of SQL, which is only "90% compatible" with IBM's, he said. Building gate-

ways to other data bases, including IBM's well-established IMS, as well as independent vendor's data bases, "will be harder," he acknowledged.

In its initial release, Ingres/Star will support multi-site reads but only single-site updates. All Ingres application development tools will work with the new product, company spokesmen said.

RTI is pursuing an open architecture approach that seeks to connect Ingres products to other vendor data bases and operating environments, Tierney said.

Senior writer Eddy Goldberg contributed to this report.

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Ada interface out from RTI

By Eddy Goldberg

ALAMEDA, Calif. — Relational Technology, Inc. (RTI) recently announced ESQL/ADA, an interface to the Ada programming language for Ingres, the company's relational data base management and application development system.

ESQL/ADA contains an Ada preprocessor that allows Ada programmers to integrate Ada source code with the SQL data base language and to call Ingres forms from within an Ada program.

Vice-President of Marketing Peter Tierney claimed his company is the first DBMS firm to interface its product to Ada. The interface gives Ingres users access to Ada procedures and allows Ada programmers to access tables in an Ingres data base.

The interface reportedly will allow applications writers to use Ada along with the Ingres fourth-generation language.

The Ada preprocessor will work with any Ada language compiler implemented for Digital Equipment Corp.'s VAX/VMS, IBM's VM/CMS or the Unix operating system. Currently, ESQL/ADA for the VAX/VMS compiler is available for \$5,000. The Unix version is expected to be out in the third quarter of this year, and the VM/CMS version is under development.

RTI has also announced the Ingres/Graphics Visual-Graphics-Editor (Vigraph), a business graphics package that works with Ingres. It replaces the company's Graph-By-Forms product, introduced in 1982.

Vigraph is priced according to system size, with packages ranging from \$1,500 on DEC's Microvax I to \$18,000 on the VAX 8600 and 8800. VAX/VMS and Unix versions are available now; no release date has been set for the planned IBM VM/CMS version.

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SOFTWARE & SERVICES

Buying a 4GL: Be forewarned

From page 31

sample data structure, and I'll show you the opportunity to write a program that I/Os itself to death. With the fourth-generation language's ease of use comes ease of abuse. A fourth-generation language allows you both to develop systems faster and to screw them up faster.

These observations do not, however, negate the value of fourth-generation languages when properly used. They can still deliver vast productivity gains, maintainable programs and applications capable of evolving as business needs change. These benefits can extend even to large applications of the kind traditionally written in Cobol. But you must recognize that fourth-generation languages are a relatively new technology, and large systems may push the limits of that technology.

The following are four actions to help avoid the unpleasant surprise of an oversized and underperforming fourth-generation language system.

First and foremost, pin the vendor down regarding the software's capabilities and limitations.

Few are Cobol substitutes

Vendors routinely claim their fourth-generation language to be effective Cobol substitutes, but few really are. Vendors also uniformly claim their fourth-generation languages to be suitable for production applications — an equivocal term if ever there was one.

Recently the president of a well-known fourth-generation language company displayed a list of production systems built with its product. A representative example supported a factory's shift scheduling. While this sounds impressive, the application probably requires a handful of logical record types and could be implemented on a micro. If your definition of production application is a high-volume shop-floor feedback and control system (of which shift scheduling might be a small part), then you should be skeptical.

You've got to demand proof of a fourth-generation language's viability — proof in the form of live reference installations supporting your anticipated capacity profile. Live means in operation, not in development. Capacity profile includes simultaneous user populations, response time ranges and batch and on-line transaction volumes, all on the same hardware you use.

If the fourth-generation language appears capable of handling most, but not all, of your applications, then pay special attention to the quality of its Cobol exit or interface.

Perform stress tests

Second, test the fourth-generation language application as you've never tested before. Develop functional tests to prove the system produces the expected results, including protecting data integrity after user abend programs and system crashes. Perform stress tests in which you overload the system with users and/or transactions to determine its practical limits. Also test on-line and batch components with equal thoroughness; you may find it necessary to redistribute the batch and on-line

mix to accommodate product limitations.

Thorough testing frequently forces redesign; therefore, you should begin benchmarking and testing as early as possible. Choose your fourth-generation language and associated DBMS partly on the basis of how adaptable and forgiving they are when it comes time to redesign for efficiency. Also be sure to consider the quality and completeness of the fourth-generation language product's performance monitoring and tuning tools.

Third, get expert help — with the emphasis on expert. You probably want to develop in-house expertise in the fourth-generation language; nonetheless, if the product is new to you, it brings new pitfalls, and you need help avoiding them. Sources of expertise may include the vendor,

other fourth-generation language users, consultants and services companies. Vendors may be the likely first choice, but a surprising number are understaffed in technical support and underskilled in their own products. Regardless of the source, you need two types of expertise.

One is skill in fourth-generation language application development. Talk to people who've developed fourth-generation language applications before and who know how it changes the pace, priorities and management of development projects. Beware of consultants who have simply repackaged traditional implementation methods with a fourth-generation language label.

The other required expertise is in fourth-generation language programming and troubleshooting. Find people who know the tricks of the trade

in your specific language and in fourth-generation language programming in general. Vendors regularly defend their products by pleading that their fourth-generation languages are being used in ways they never intended. But how many can document just how the product is intended to be used?

Finally, seize every opportunity to streamline your application design. If you are using the fourth-generation language to replace an existing production application, take the opportunity to redesign, not simply replicate, the old system's functionality. Let your first instinct be to streamline, not expand, the application. Include in the new system only functions with demonstrable business value. A good fourth-generation language will allow your application to expand and evolve over time.

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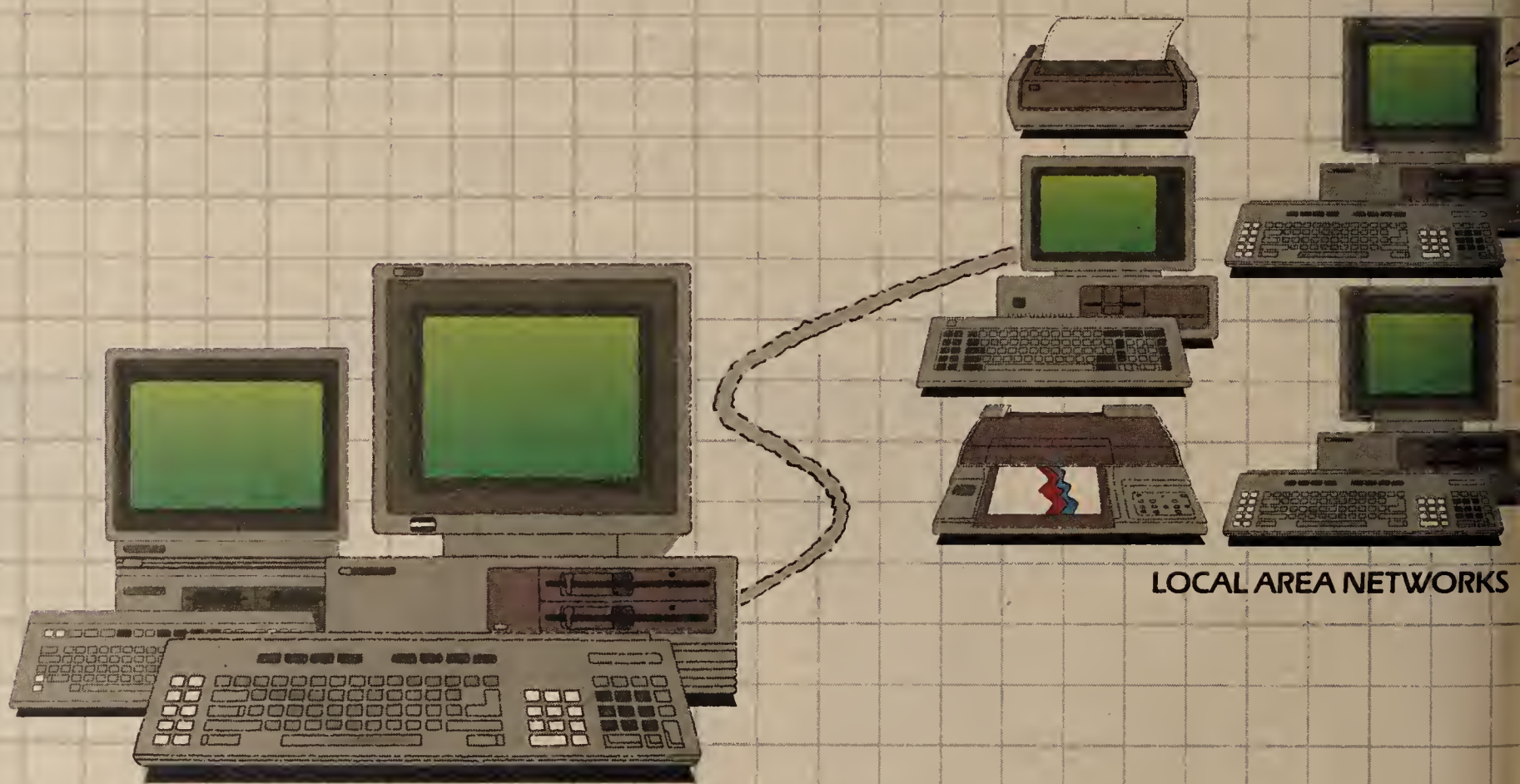
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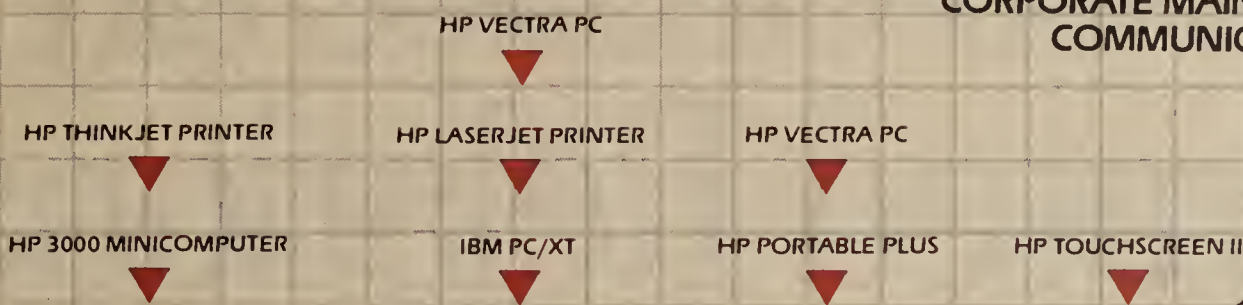
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HARD TALK
Donna Raimondi

Taking chances with new tapes

Could it be that the users who are replacing large iron oxide-based tape libraries with the newer chromium dioxide-based cartridge tapes are, one, poisoning their environments and, two, taking chances with the life span of their archives?

There are no chemical experts at *Computerworld*, but a letter from William Manly, a physicist who has examined and tested magnetic tapes since 1959, gives pause for thought.

"Because of the controversial nature of this letter, I would like to state that I am an independent consultant, and that I am writing this because it is my opinion. I am not in the employ of anyone in the magnetic iron oxide business, or anyone else who has a vested interest in iron oxides." So states the letter by Manly, who is now a consultant to the magnetic recording industry at HMI Consulting in Arlington, Texas.

The controversy Manly refers to in the letter and in a later phone conversation surrounds his assertions that the chromium dioxide used in IBM's 3480 and other vendors' cartridge tapes degrades in the presence of moisture and oxygen to chromium hexavalent compounds that are highly poisonous. In addition, Manly says that nobody knows the life span of chromium dioxide-coated tapes but that the material has a fairly short half-life and probably should not be used for archival storage.

"I'm spitting against the wind coming from a downdraft of millions of advertising and sales dollars, but it

See **CHANCES** page 39

Raimondi is a Computerworld senior writer.

Nine-track subsystem bows

Storage Technology offers CDC Cyber compatible

By Donna Raimondi

LOUISVILLE, Colo. — Storage Technology Corp. (STC) has unveiled a nine-track tape subsystem for Control Data Corp.'s Cyber mainframe systems.

The move is a new strategy for STC, which formerly marketed only IBM plug-compatible products, said Ron Dost of product marketing at STC.

"We are taking our existing technology into new markets and leveraging the support systems we already have in place," said Dost. "It is possible we will do this in the future with other vendors also," he said. The new system is a version of STC's existing 4600 IBM-compatible tape subsystem with hardware and microcode enhancements to allow for CDC compatibility, he added.

The 4700 Tape Subsystem is said to use 20% less space than its CDC counterparts, the CDC 669 and 679 series subsystems.

The 4700 can be attached to multiple CDC and IBM mainframes simultaneously for shared access and storage capability, Dost said.

The unit is a 125 or 200 in./sec. nine-track tape subsystem designed for use with CDC Cyber 700 and 800 series mainframes and is compatible with IBM 360, 370, 4300, 3030, 3080 and 3090 series mainframes. It can sustain a data transfer rate of up to 1.25M byte/sec.

The system emulates the CDC 7021 tape subsystem and requires no hardware modifications to the CDC mainframe. No software modifications are needed with CDC's operating systems NOS 2.1 through 2.4, NOS-BE and NOS-VE. "Any very old systems running different versions of the operating system may require minor adjustments," Dost said.

The 4700 can connect to the selector channel of the IBM 360 and the block multiplex of the 370, 4300 and 3000 processor series. It also attaches to the data streaming channels of the 4300 and 3000 series.

The tape subsystem consists of three

See **NINE** page 38

INSIDE

Bar code systems make slow, steady inroads in corporations/38

NEW THIS WEEK

■ Interface Systems offers seven-color IBM-compatible printer

■ For more on this and other new products, see pp. 115-128.

INSTANT ANALYSIS

"The reason we have so much confusion in the whole area of departmental processing is primarily because IBM doesn't want to distribute their general-purpose processing off of the mainframes."

— Tim Tyler,
Mountain View,
Calif.-based
consultant

TI printers integrate text, graphics

By James Connolly

TEMPLE, Texas — Incorporating what it terms "second-generation laser print engines" with proprietary controllers, Texas Instruments, Inc. has introduced its Omnilaser Series 2000 family of page printers for shared graphics and word processing environments.

Two of the three Omnilaser products use Adobe Systems, Inc.'s Postscript page description language, which TI officials said allows flexibility to integrate text and graphics. According to TI, the three Omnilaser printers use Ricoh Corp. engines that provide improved paper handling, higher duty cycles and the ability to print more copies in their lives than the previous generation of laser printers.

The printers using Postscript are the Omnilaser 2115 shared resource printer and the Omnilaser 2108 workstation printer. They are intended for graphics-inten-

sive applications such as in-house publishing, computer-aided design and engineering and forms generation.

The 2115 prints 15 page/min. and includes the Postscript controller, built around a 32-bit Motorola, Inc. 68000 microprocessor. It features 3M bytes of random-access memory (RAM), has a maximum duty cycle of 25,000 page/mo (compared with 3,000 page/mo for earlier products) and has a machine life of 1.5 million prints. It also provides 300- by 300-dot resolution, according to TI.

The Omnilaser 2108 uses a 68000-based controller but only provides 2M bytes of RAM and 8 page/min printing. It has a 10,000 page/mo duty cycle and a 600,000-print machine life.

The third printer, the Omnilaser 2015, uses the same 15 page/min engine as the 2115 and includes 512K bytes of RAM.

See **TI** page 38

The Same Day IBM Announced DOS/VSE SP 2.1, EPIC/VSE Supported It.

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Unsure of applications, firms slowly but surely belly up to the bar code

By Rosemary Hamilton

NEW YORK — Although some industry surveys suggest that the bar code systems market will grow at a rate of 50% through 1990, one research firm said the industry will grow at a much slower rate — approximately 20% a year — because of general unfamiliarity with the systems.

Bar coding systems, which generated \$600 million to \$700 million in sales last year, according to a recent study by the market research firm Find/SVP, are usually associated with supermarket cash registers.

While automatically coding the prices of groceries is

the most visible use of bar code systems, the technology has been used in other areas for many years and is also being applied to new areas at a slow but steady rate. Eastern Airlines, for instance, has been using bar code systems for baggage handling since 1973, according to the research report.

Other applications include automatic billing, inventory

management and control and document processing. The study found widespread use in the health care industry for identification purposes.

This has resulted in the founding of an organization called the Health Industry Bar Code Council, according to the study. The council works along with other organizations to promote standardization of the symbols

used for bar coding.

The study also found that the top three U.S. automobile makers developed a combined total of 200 different uses for bar coding in production processes, including parts identification and shipping destinations.

A more novel use involves the runners of the New York Marathon, who are bar coded before the race. At preregis-

tration, a bar code identification is established for each runner, who then must match that identification when registering at the starting line before being permitted to run the race. That bar code is then applied to the runner's bib. When the runner crosses the finish line, a scanner reads the runner's ID and assigns a finishing time to that runner.

Nine-track subsystem out

From page 37

devices — a control unit, either a 125 or a 200 in./sec. tape drive and a channel interface to provide communications translation functions between CDC technology and the Federal Information Processing Standard-compatible technology. Up to seven drives can be attached to one control unit.

The 4700 A70 200 in./sec. controller/drive unit costs \$47,500, and the 4700 B70 drive unit costs \$21,000. The 125 in./sec. models, the 4700 A50 and B50, cost \$45,700 and \$19,200, respectively.

TI printers for text, graphics

From page 37

TI officials said the Omnilaser printers have industry-standard emulations. Standard interfaces include parallel and RS-232 serial interfaces.

The 2015 will be available from TI resellers in July at a suggested list price of \$5,995. The 2115 costs \$7,995, and the 2108 costs \$5,995. They will be available during the fourth quarter of this year.

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AMOUNT: 681 **500.00 **500.00

NOT VALID OVER 90 DAYS
AUTHORIZED SIGNATURE: James Jones

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SYSTEMS & PERIPHERALS

Chances with new tapes

From page 37

seems to me that someone should speak up before the deed is completely done," Manly says in regard to the wholesale replacement of older tape libraries with the new cartridge systems.

As an employee of Ampex Corp. in the early '60s, Man-

ly was part of a technical team that examined and reported negatively on a chromium dioxide material's potential use in magnetic tapes.

The team found that the material had only a slight advantage in intrinsic magnetization over two other commonly used tape coatings and that the price was several dollars a pound versus less than a dollar a pound for iron oxides, Manly says.

Tape companies that examined the Du Pont Co.-cre-

ated material were almost unanimous in rejecting chromium dioxide at that time, Manly says.

Ideal for audio tapes

Subsequently, engineers discovered that the material, although not appropriate for long-term data storage, was ideal for instrumentation and audio tapes, according to Manly. Word of the substance's success got back to Du Pont, which started to get takers on its license offer.

Manly's letter goes into minute details of chemical compositions and decomposition and magnetizing properties. The bottom line is that tape makers that use the chromium oxide material for coating tapes have to add so much doping to minimize the poisonous nature of the material that they reduce the life of the substance.

Manly theorizes that about the time the experimenting with dopants occurred — about 10 years ago

— IBM made its decision to use chromium dioxide for its cartridge tapes.

It was too late

He maintains that by the time IBM released the 3480 in 1984, IBM's technical people should have decided to go with iron oxides but that it was too late.

So where does that leave the industry? "It leaves the computer industry implementing their bulk archival data storage with a chemically and magnetically unstable material which degrades to highly poisonous compounds," Manly suggests.

The problem is not big right now, Manly says. But three to five years down the road, he predicts, cartridge-tape users will start to experience inexplicable errors.

'Loses magnetization'

"The tape won't look like it is degrading, but the material will be losing the strength of its magnetization," Manly says. Binders used to contain the poisonous deterioration should protect the computer room from any health hazards, unless the tape is shredded.

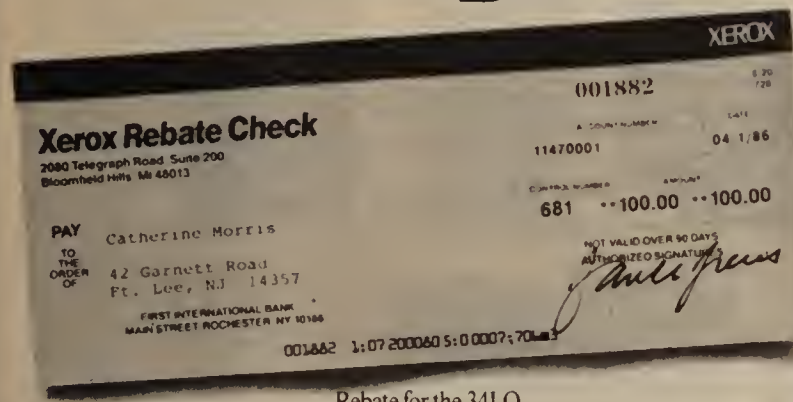
"However, if the user wants to discard the tape, he will either have to do so illegally or pay a lot to dispose of the toxic waste in a government-approved fashion," Manly adds.

Manly is not saying there is no place in any industry for chromium dioxide-based tape. But he is saying that some investigation needs to be done to ascertain the tape's safety and longevity for data storage.

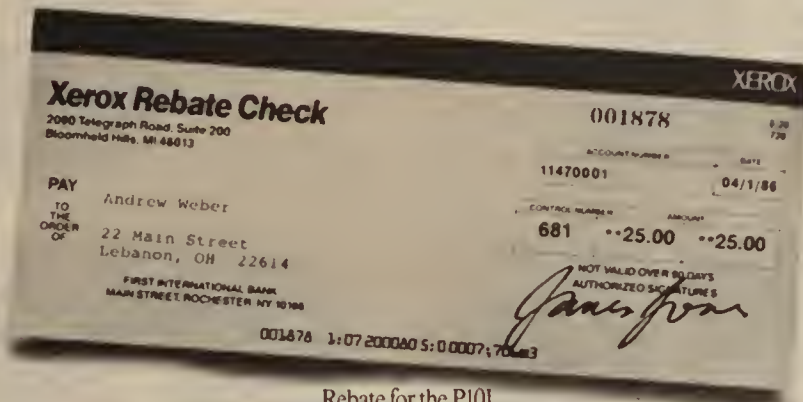
"The remedy for this whole mess is simple. Ask for iron oxide-based tapes with equivalent performance when you are intending archival storage. The technology is there, and your favorite tape company can make it for you and will, if the demand is evident," he advises.

XEROX

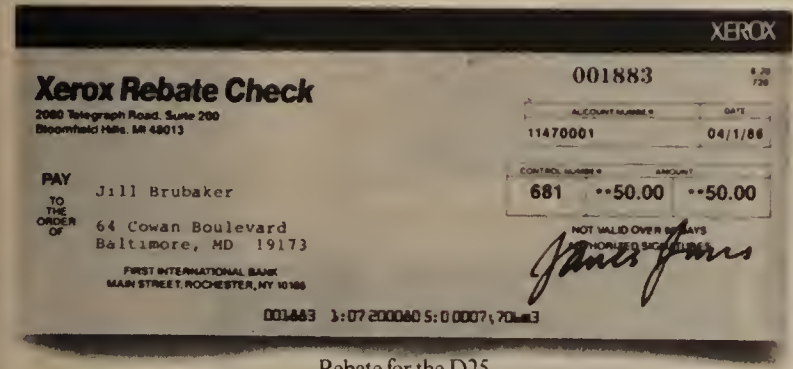
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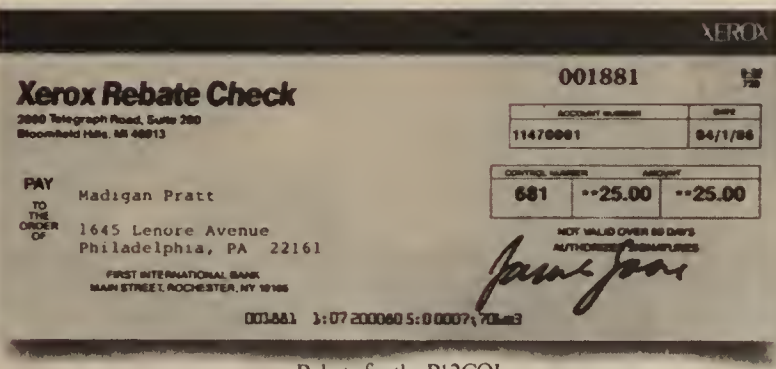
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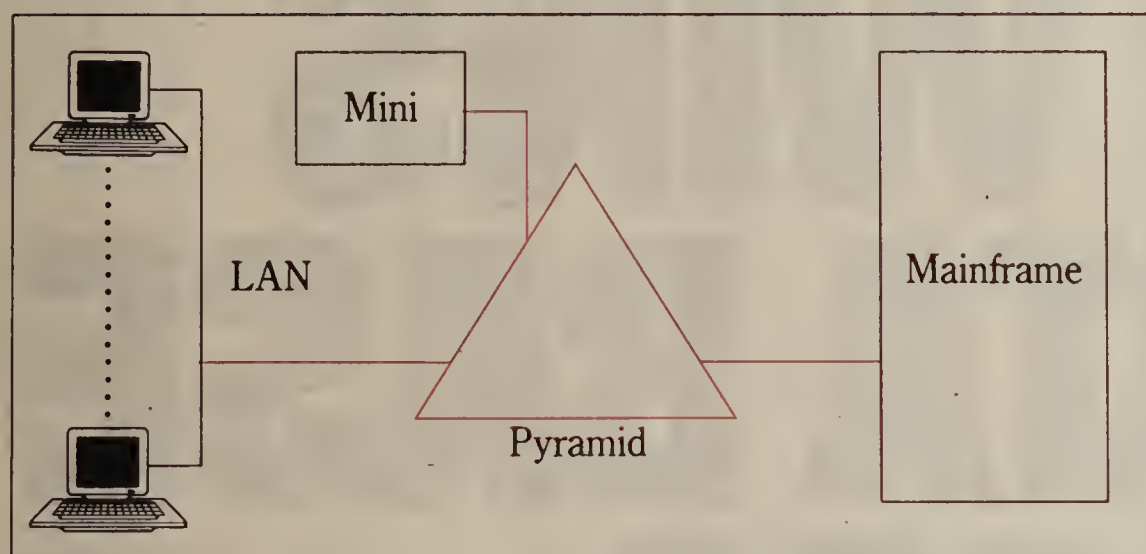
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And because some of our systems never get turned off, we offer 24-hour service and support. Plus extensive training on both hardware and software to insure our customers never get turned off, either.

This combination of features and openness makes our systems ideally suited for three important applications: As data base servers, pc/workstation servers, or software development environments. We'll talk about each one of these applications at length in a series of advertisements.

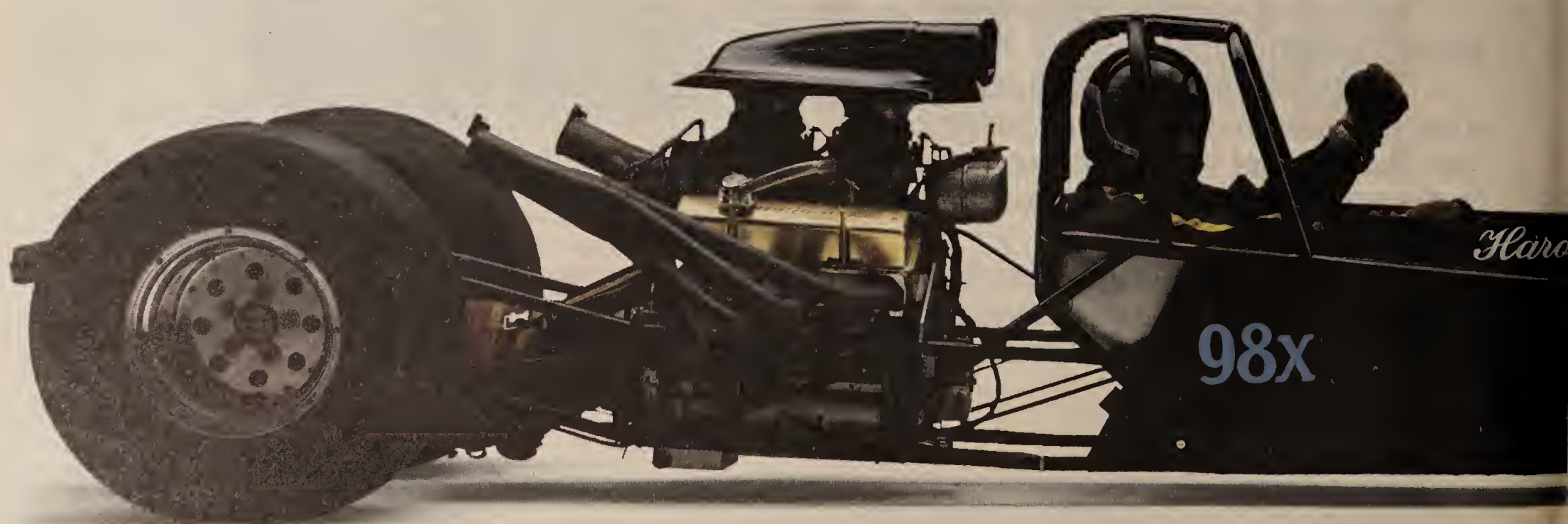
In the meantime, to learn more about Pyramid systems and the company behind them, contact us at 1295 Charleston Road, P.O. Box 7295, Mountain View, CA 94039-7295. Or call 1-415-965-7200, Ext. 3450.

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The Shape of Performance.

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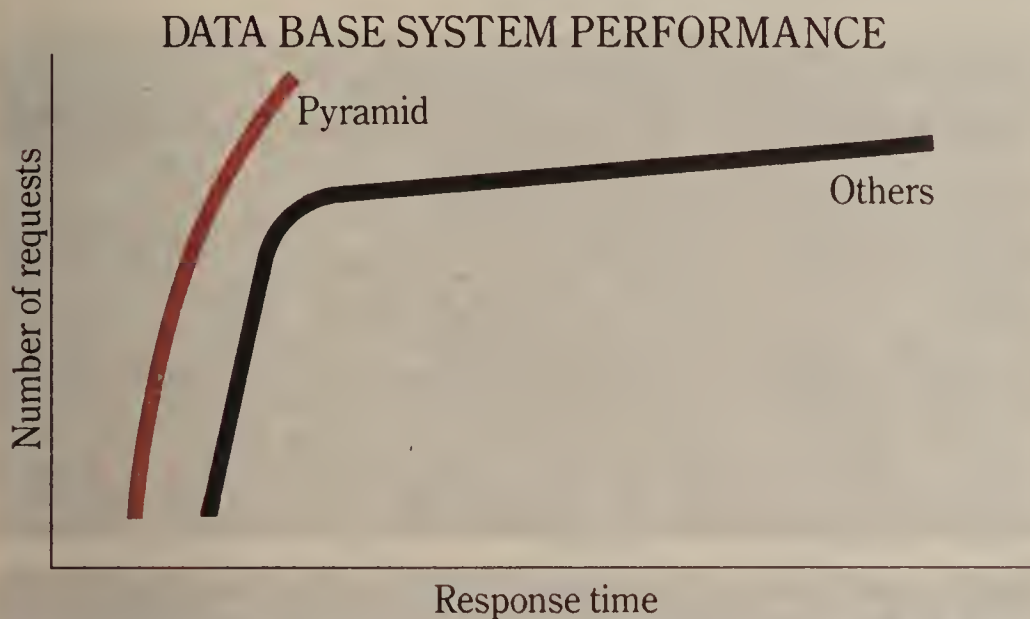


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We also have processors for everything that needs one. Namely, the disks, the terminals, and any attached networks. That means the peripherals always have a green light, and the CPU can go its own way.

And our XTEND™ bus is the ultimate in handling. With an advanced cacheing scheme

and a message-based, 40 Mb bandwidth, it's no wonder.

But performance isn't the only thing we offer. There's comfort, too.

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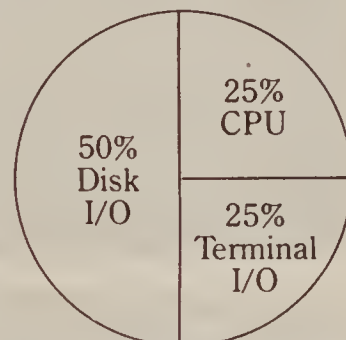
We have strong relationships with every major relational data base manufacturer. So not only will you have a choice of what to run, you'll get support from both us and them. No matter who "them" is.

And since Pyramid systems are open systems, built on widely-supported industry standards, we can give you more different ways to go. Without locking you in. Or locking your other suppliers out. Chances are, they support the same standards. Like UNIX®, for instance.

It's that wide openness that'll have everybody cheering, including you, because a Pyramid can give more people more data base access. From individual users on pc's, workstations or terminals, to departmental micros and super-minis, to mainframes running batch, transaction processing, or scientific applications.

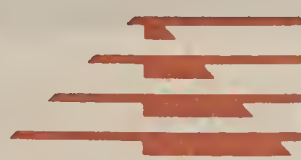
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Pyramid Power

HOW CAN YOUR PEOPLE WORK WHEN THEY'RE ALWAYS CHANGING JOBS?

```
ON ****
R USERID --->
ON PASSWORD->
```

```
SS01: TEST PRO
SS02: TEST PRO
SCSTEST: SCS PRIN
ENTER DESIRED APPL
```

```
S/V/S SIGNON - ENTE
NAME:
PASSWORD:
NEW PASSWORD:
```

```
>LOC
JOB 7932 AGOO
>LOGOFF CLE
```

```
VALID APPLICA
CICSFERS: CIO
ENTER DESIRED
```

```
16 DISK READS, 2
208 TERMINAL I/O
ELAPSED TIME = 00
END OF SESSION
```

There's only one way your people can keep up with their work. Work two jobs.

Most terminals, however, require that they *change* jobs. That they logoff one job before they logon and start work on another. It's a process that's laborious, time-consuming and unproductive.

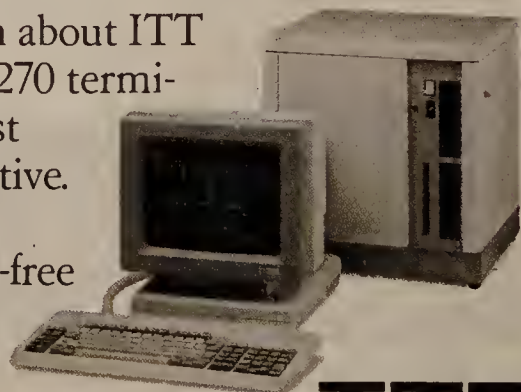
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Which means everyone in your company can now work two jobs at the same time. Rather than choose between them.

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SYSTEMS & PERIPHERALS

Users rate their mainframe vendors

Manufacturer and Model									
Survey Item	Amdahl	Burroughs	Control Data	Honeywell	IBM	NAS	NCR	Sperry	Other Mainframes
No. of User Responses	17	186	9	64	708	21	178	88	31
Average Life of System (months)	29.50	40.86	42.88	42.18	30.41	27.47	50.96	43.89	58.52
Acquisition Method (%)									
Purchase	47.06	61.83	77.78	62.50	47.18	42.86	71.91	44.32	67.74
Rental or Lease from Manufacturer	23.53	17.74	22.22	12.50	11.16	19.04	14.04	30.68	6.45
Lease from Third Party	29.41	20.43	0.00	25.00	41.24	38.10	14.04	23.86	25.81
System Ratings (4.0-1.0)									
Ease of Operation	3.47	3.68	3.22	3.44	3.27	3.67	3.31	3.13	3.32
Reliability of Mainframe	3.65	3.50	3.67	3.50	3.79	4.00	3.43	3.51	3.45
Reliability of Peripherals	3.50	3.09	3.44	3.30	3.53	3.71	3.32	3.21	2.94
Manufacturer's Maintenance Service									
Responsiveness	3.71	3.47	3.89	3.42	3.48	3.81	3.34	3.40	3.37
Effectiveness	3.53	3.23	3.67	3.17	3.52	3.81	3.20	3.21	3.20
Manufacturer's Technical Support									
Troubleshooting	3.59	2.92	3.50	2.97	3.20	3.67	2.78	2.83	3.13
Education	3.12	2.76	3.25	2.81	3.13	2.81	2.98	2.59	3.03
Documentation	3.24	2.54	3.50	2.67	2.99	3.10	2.77	2.41	2.84
Manufacturer's Software:									
Operating System	3.10	3.78	3.22	3.41	3.25	3.09	3.28	3.24	3.31
Compilers & Assemblers	2.88	3.46	3.56	3.39	3.27	3.09	3.08	3.26	3.31
Applications Programs	2.86	2.75	3.25	2.49	2.75	3.18	2.55	2.63	2.50
Ease of Programming	2.91	3.49	3.11	3.21	2.91	3.08	2.95	2.99	3.10
Ease of Conversion	2.60	3.34	3.13	3.08	2.75	3.00	3.10	2.45	3.07
Overall Satisfaction	3.00	3.42	3.33	3.24	3.14	3.08	3.08	3.06	3.20
Additional Ratings (4.0-1.0)									
Timeliness of Hardware Installation	3.82	3.39	3.75	3.48	3.66	4.00	3.30	3.28	3.53
Timeliness of Software Installation	3.20	3.33	3.50	3.38	3.25	3.33	3.10	3.09	3.28
Ease of Expansion	3.53	3.54	3.38	3.44	3.31	3.75	3.52	3.41	3.04
Compatibility of Hardware Carried Over from Other Systems	3.53	3.27	3.50	2.98	3.25	3.71	3.28	2.57	2.90
Compatibility of Programs/Data Carried Over from Other Systems	3.31	3.31	3.25	3.14	3.16	3.76	3.32	2.47	3.03
Power/Energy Efficiency	3.18	3.30	3.13	3.15	3.20	3.24	2.97	2.90	2.35
Productivity Aids Help Keep Programming Costs Low	2.79	2.88	2.88	2.69	2.58	2.40	2.63	2.56	2.66
Software Support Delivered by Vendor	3.13	2.69	3.13	2.81	2.88	3.05	2.44	2.65	2.69
Keeping Up with & Implementing Vendor Changes to Hardware/Software (Very Easy=4.0, Very Difficult=1.0)	3.24	3.27	2.75	3.14	2.81	3.10	3.11	2.73	3.00
Did the system do what you expected it to do? (%)									
Yes	94.12	93.55	100.00	98.44	96.47	100.00	94.94	86.36	96.77
No	5.88	1.61	0.00	1.56	0.99	0.00	1.69	5.68	0.00
Undecided	0.00	4.84	0.00	0.00	2.12	0.00	3.37	5.68	0.00
Would you recommend system to another user? (%)									
Yes	94.12	89.78	88.89	85.94	95.48	100.00	84.83	84.09	83.87
No	5.88	3.23	0.00	3.13	0.99	0.00	5.06	6.82	12.90
Undecided	0.00	6.45	11.11	10.93	3.11	0.00	9.55	6.82	0.00

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”

Datapro noted that no systems met Datapro's criteria for special merit, which the IBM 4381 and 3083 earned a year ago.

overall scores slip the most from 1985 were Amdahl Corp., with a score of 3.00, and National Advanced Systems Corp. (NAS), with a score of 3.08. Their scores were down 0.22 and 0.42, respectively.

One pattern that Datapro officials were unable to explain was that Amdahl and NAS posted relatively high scores in many of the 23 categories, including ease of operation, reliability and support areas. However, when users scored those two vendors on the "overall satisfaction" question, the scores inexplicably slipped.

One Amdahl user noted that Amdahl has been "very responsive" to his needs. That user, who asked not to be identified, said of Amdahl's low score, "It's surprising. We have been very happy with them. We had some of the first 5860s of the line, and although we had a few bumps in the early going, those settled right down. Right now, we exceed 99.5% availability on each machine."

More responses, 708, came from IBM users than from any other vendor's customers. Those users gave overall satisfaction ratings averaging 3.14, with individual systems ratings ranging from 3.11 for the 4361 to 3.20 for the 3090.

Most of the vendors recorded lower scores in software-related categories than in hardware categories, particularly in the applications programs area. Datapro officials noted that the software results were comparable to previous scores.

Datapro also noted that no systems met Datapro's criteria for special merit, which the IBM 4381 and 3083 earned a year ago. That special mention is reserved for systems rated by at least 20 users and earning an overall satisfaction rating of 3.20 and no ratings of less than 2.80.

However, this year, more systems earned 3.50 ratings in individual categories than last year. Whereas only five systems mentioned by 20 or more users scored over 3.50 in mainframe reliability last year, nine systems made that mark this year. Similar gains were recorded in areas such as ease of operation, peripherals reliability, operating system and maintenance.

When asked whether their systems did what was expected of them and whether the users would recommend their systems to other users, 95% of all respondents, down one percentage point from 1985, said their system did what was expected, and 92%, the same percentage as last year, said they would recommend their systems to others.

”

Burroughs Corp. scored the highest overall satisfaction numbers with an average of 3.42, based on 186 responses.

”

The two vendors that saw their overall scores slip the most from 1985 were Amdahl Corp. and National Advanced Systems Corp.

Survey finds CPU satisfaction up

From page 1

with more than 31% of users reporting more than 10G bytes of storage, which was an 11-point jump over 1984.

Users judged their systems in 23 subjective categories, rating their computers on a scale of one to four, with four being the best score.

Burroughs scored the highest overall satisfaction numbers with an average of 3.42, based on 186 responses. That 3.42 figure was up slightly from the 1985 Burroughs score. Only seven of those 186 responses came from users of Burroughs' V300 series, but those seven gave that series some of the survey's best scores, including a 3.86 overall satisfaction rating. Most of the re-

sponding Burroughs users rated Burroughs' B series of mainframes.

One Burroughs user was not surprised by the V series results. "We are very, very pleased with our V machines in terms of throughput. The performance of the V machines as opposed to Burroughs' B machines represents a 100% increase in throughput. Also, the transition to the V machine was easy because it uses the same operating system," said Peggy Price, director of hospital information systems for Mount Sinai Medical Center in Miami.

Another vendor that posted consistently higher scores than in 1985 was Honeywell, Inc. Honeywell scored an overall satisfaction rating of 3.24, up from 3.15 in 1985. Control Data Corp., which was omitted from the 1985 report because too few users participated in the survey, received nine responses for an overall satisfaction score of 3.33.

The two vendors that saw their

Users rate their mainframes

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NCC Preview

Edited by Becky Batcha



ILLUSTRATION BY KEN CONDON

Connectivity, strategic DP top user concerns on eve of NCC

National Computer Conference: June 16 to 19

By CLINTON WILDER

One of the best ways to get a handle on hot issues in the data processing community is to check the credentials of the keynote speaker at the National Computer Conference.

In 1984, when IBM was flying high on its success of transplanting the microcomputer revolution into the corporate MIS world, Big Blue's president, John F. Akers, addressed the gathering in Las Vegas.

In 1985, when a serious vendor

Wilder is Computerworld's senior editor, computer industry. CW correspondents James A. Martin, Alan Alper, Jeffry Beeler and Peggy Watt contributed to this story.

slump exacerbated concerns about the ability of U.S. computer firms to compete with Japan, Bobby R. Inman took the NCC podium at Chicago's McCormick Place. Inman heads the leading-edge Microelectronic and Computer Technology Corp. research consortium.

And in 1986, for the first time in



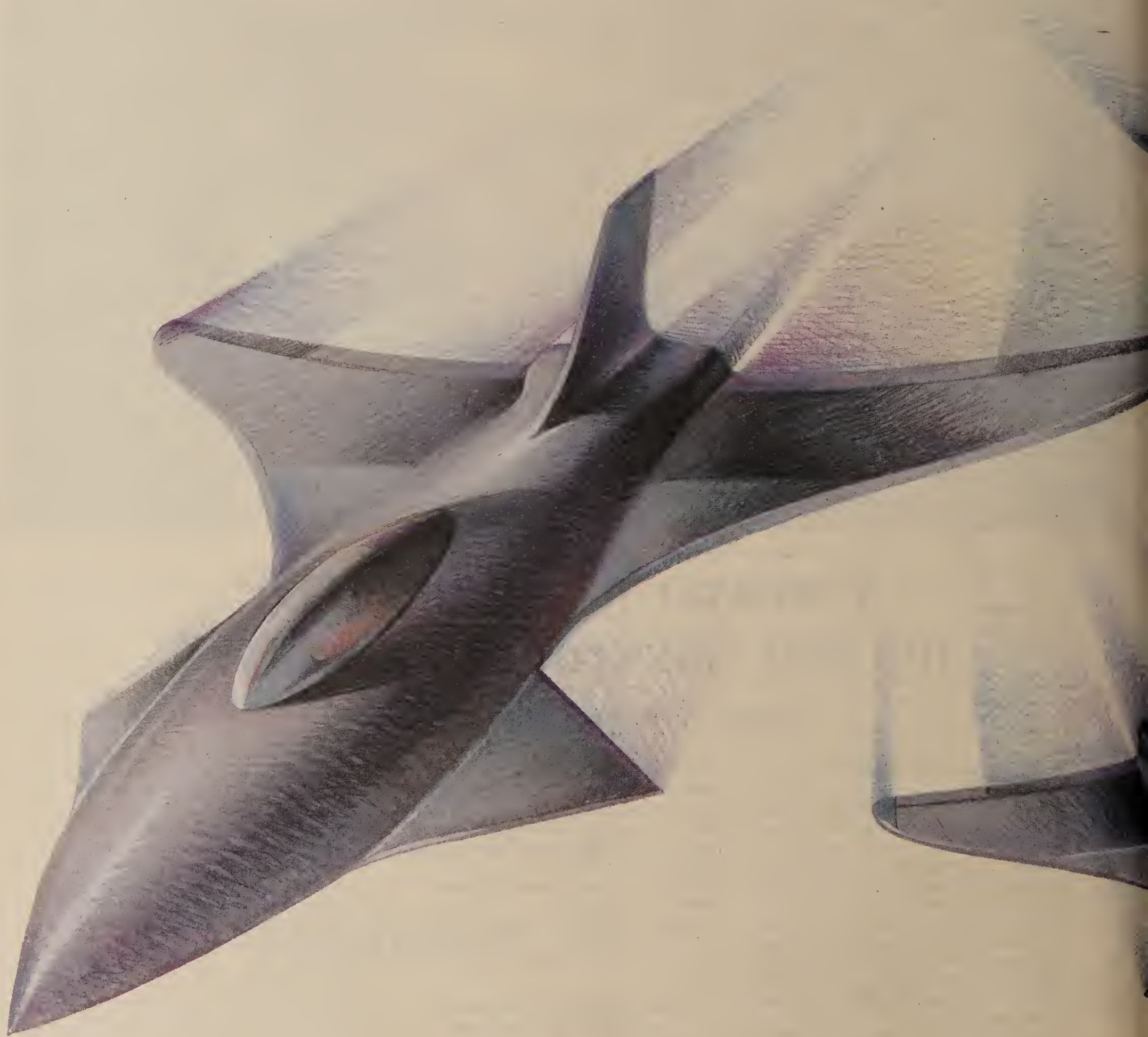
***Not every user will arrive
at NCC '86 seeking a
sophisticated network, but
virtually every user wants
reassurance that his
systems will be able to talk
to each other.***

many years, NCC officials have chosen the head of a user company, AMR Corp. Chairman Robert Crandall as the keynoter — with good reason.

AMR's American Airlines, with its SABRE automated airline reservation system (see story page 54), is perhaps the best example of a trend at the forefront of the nation's MIS departments: DP for profit.

Across the U.S., in huge IBM 3090-based operations and small shops running minicomputers, the distinctions between user and vendor are becoming increasingly blurred. The strongest evidence of the transition of the U.S. economy from being manufacturing-based to information-based comes from the large computer users themselves: A recent Arthur Andersen & Co. survey of information executives in Fortune 1,000 companies found that

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NCC Preview

Connectivity, strategy top user concerns

Continued from page 49

the No. 1 MIS issue is the use of information for competitive advantage.

"That is what is driving the hot technologies of communications, artificial intelligence, software engineering and computer-integrated manufacturing," says Melvyn E. Bergstein, Arthur Andersen's managing director of technology practices. "For many large users, the problem is understanding the concept of information for competitive advantage but not knowing how to implement it."

American Airlines' SABRE system and American Hospital Supply Corp.'s (AHS) customer site terminals linking hospitals to the AHS data base are two of the most commonly cited examples, but many other firms are quietly planning what could be a stampede into the information business.

One company currently making the transition to information vendor is Agway, Inc. in Syracuse, N.Y., a \$4 billion manufacturer and distributor of livestock feed and other farm products. Agway plans to add a bundled microcomputer and farm management software package to its product line, leveraging its strong presence in a large vertical market.

"We feel we've always been offering information products within the company," says Dennis LaHood, Agway's corporate director of MIS. "Each development team is allocated to a specific user group, so we always looked at them as accounts. We don't see that being any different in the external marketplace."

From feed grains to financial services, companies are beginning to study new uses of DP technology — with dramatic implications for MIS executives.

"The MIS director today has to become a strategist," says David Kaytes, an information technology management consultant with Booz Allen & Hamilton, Inc. "He has to understand the function of the company's business and bring his talents, the application of technology, to the table." The corporate stature of MIS still varies widely, however, and Kaytes points out that more than 50% of his client companies do not house their MIS departments under the same roof as their corporate headquarters.

To make matters even tougher, the push for the competitive use of information technology has come at a time when decreased capital spending is the order of the day in many U.S. industries. Consequently, many MIS departments are being asked to do more with less.

Getting more bang for the DP buck has led to many of the root causes of the 1985-1986 computer industry slump: delaying hardware purchases and taking longer to evaluate communications and compatibility issues, while trying to do more with software already in place.

"Programmer productivity tools like Cobol generators have finally taken hold," says Thomas Lawton, editor of the "Computer Services Report," a software and DP services newsletter in Belmont, Mass. "When the budget screws get tightened down and you're not upgrading, you have more time and incentive to look at those kinds of things."

That pause, which seemed to begin in early 1985, touched off the deepest and most fundamental downturn in the history of large systems vendors. The biggest industry news at NCC '85 did not come from the floor of McCormick Place, but from financial depart-

ments in Armonk, N.Y., Minneapolis and so on, where a series of dismal quarterly reports delivered a timely picture of the state of the industry.

Eleven months later, the slump has proven to be a tough one for many companies — including IBM — to shake off. Combined first-quarter 1986 profits of 11 leading hardware vendors advanced just 5%, a lackluster performance for any industry, but especially disappointing in the formerly high-flying high-tech world.

Breakneck earnings growth, although still occurring at firms such as Digital Equipment Corp., Stratus Computer, Inc., Compaq Computer Corp. and Apple Computer, Inc., may prove to be an anachronism for many computer companies. And the maturation of both the

hardware and software and services industries has spurred a restructuring in which almost no potential partnership is out of the question.

The motivation for Burroughs Corp.'s recent takeover of Sperry Corp. dramatically demonstrated that many firms no longer want to go it alone. For example, Applied Data Research, Inc., a technology-driven software house, forsook its independence for the substantial corporate muscle and capital of Ameritech, a former Bell operating company.

"These pairings indicate other things to come in the next few years," says Robert J. Conrads, vice-president of mergers and acquisitions at Kidder Peabody & Co. "We've passed through a stage of spawning of new technologies — next we'll see a new wave of large companies to really execute them."

In the next few years, vendors will prosper by providing true solutions to the connectivity dilemmas facing virtually all users — particularly those trying to deliver information in the market-

place. Just about all the hot issues involving the processing and distribution of data come down to the same thing: networking.

"There is a lack of software that will drive both the PC and the mainframe in file transfer applications, and there don't seem to be any standards in that area," says Kenneth R. Johnson, MIS director for Dr. Pepper Co. His complaint is a common one.

The establishment of industrywide communications standards may prove to be a utopian concept, but vendors are at least paying more lip service to the goal. Dozens of vendor companies, including IBM and a handful of user firms, have joined the Corporation for Open Systems, a nonprofit consortium formed earlier this year to promote common protocols and connections for multivendor environments.

Whether it is realistic to expect competing vendors to develop common standards is debatable, but it is clear that lack of compatibility is one fundamental cause for the industry's financial malaise. Not every user will arrive at NCC seeking a sophisticated, value-added network for using corporate data as a competitive weapon, but virtually every user wants reassurance that his systems will be able to talk to each other.

"As long as the old protocols continue to be supported, we don't particularly care about linking all our hardware," says John Cook, vice-president of computer operations at Central Bank in Concord, Calif. "But as new equipment comes out, we need the assurance of a clear-cut growth path."

THE STATE OF THE INDUSTRY: FIVE BROAD TRENDS TO KEEP IN MIND AS NCC UNFOLDS



Connectivity. Right now, most of technology's hot topics center around one concept: networking. Almost every NCC attendee will be looking for some assurance that the systems he buys will be able to talk to each other.



Strategic DP. Companies expect their DP operations to implement strategic applications that will improve corporate earnings. Increasingly, they are also asking DP to create information products and services that can be sold outside the company.



Making ends meet. Even as the MIS department's corporate role grows, its budget may be shrinking, thanks to a trend toward decreased capital spending in American industry. Programmer productivity tools and other aids that let companies forestall hardware purchases are gaining attention.



The industry slump. With the combined first-quarter 1986 profits of 11 leading hardware vendors advancing just 5%, the breakneck earnings growth may prove to be a thing of the past for many computer companies.



Mergers and acquisitions. With the hardware and software industries reaching maturity, a great deal of restructuring is going on. Actions like Burroughs' recent takeover of Sperry will become more and more prevalent.

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NCC IN A NUTSHELL

DATES: Monday, June 16 to Thursday, June 19

LOCATION: Las Vegas Convention Center and Hilton Hotel, Las Vegas

TIMES: • Keynote speech takes place Monday at 9:30 a.m. in the Hilton Ballroom.

• Exhibits are open from 10 a.m. to 6 p.m. Monday, Tuesday and Wednesday and from 10 a.m. to 4 p.m. Thursday.

• Technical sessions begin Monday at 1:30 p.m. and continue until 5 p.m. Thursday.

• Professional development seminars begin Sunday at 1 p.m. and continue until 4:30 p.m. Thursday.

SPONSORS: American Federation of Information Processing Societies, Association for Computing Machinery, Data Processing Management Association, IEEE Computer Society, Society for Computer Simulation

FOR MORE INFORMATION: Call AFIPS at (800) NCC-1986; in Virginia, call (703) 620-8955.

NCC Preview

Interview

American's Crandall proves DP's profit potential

Robert Crandall — chairman, president and chief executive officer of American Airlines and its parent company, AMR Corp. — guided the development of SABRE (the Semi-Automated Business and Research Environment), a classic in the strategic use of information systems.

SABRE is a worldwide travel information system based in Tulsa, Okla. According to American's count, the system handled 45% of all airline reservations made in the U.S. last year as well as 20% of all reservations for car rentals and 10% for hotel rooms.

AMR employs 2,400 data processing employees. Its DP shop runs two IBM 9083s, two IBM 9090s (specially configured versions of the IBM 3083 and 3090) and an Amdahl Corp. 470V/8.

Crandall says it was his "great good fortune" to be exposed to the business possibilities of DP early in his career as manager of computer programming at Hallmark Cards, Inc. and head of data processing at Trans World Airlines.

He sees more possibilities right now, which is why he recently re-hired Max Hopper, the man who developed SABRE and built a reputation for innovation at American. Hopper had left the airline for a short stint at Bank of America but reclaimed a post at American — senior vice-president of information systems — seven months ago.

Crandall won the Gartner Group, Inc.'s Excellence in Technology award for 1985 and will be the keynote speaker at next week's National Computer Conference in Las Vegas. He spoke recently with Computerworld Features Director George Harrar at American's headquarters in Dallas.

Can you envision a healthy, profitable American Airlines without SABRE?

American as it sits today could not be healthy and profitable without the inputs and activities of SABRE. Both the profitability of the external system and the functionality of the internal system make a contribution to American which is irreplaceable — today.

But Southwest Airlines, a very successful operation, does not have it. America West does not have it. Continental Airlines has a reservations system but nothing near the equivalent of SABRE. So you could certainly have a different kind of American Airlines without SABRE which might very well be profitable and healthy.

The examples you mentioned are airlines, while AMR is becoming a diversified company. Do you see American if not evolving away from being a passenger-carrying airline at least moving somewhere along the line from a passenger-carrying airline to a provider of information services?

It would be inaccurate to think of it as "evolving away" from some-

thing. AMR is going to become a substantially more diversified company.

AMR is likely to be a company whose revenues for the foreseeable future will primarily derive from carrying passengers and freight, but with a dollar volume of revenues and profitability associated with other activities — principally data processing and communications.

You will use SABRE to take you into different markets, such as insurance or retailing?

That's conceivable, although our highest priority is the application of the technologies we're good at to the business we know best. Whether there are applications to which we can bring those skills outside the airline business, I'm not sure.

Our initial readings of the marketplace are that we're likely to

ings that we hoped would come from the airline.

AMR's first-quarter earnings were \$4.2 million. How much of that came from DP services or SABRE?

Oh, 600%.

That figure confuses me a little, but I get your point.

What I'm telling you is that the airline lost a substantial amount of money in the first quarter. The data processing operation made a substantial profit.

That relationship is abnormal because the first quarter is traditionally a bad period for the airline business. Max's business is less seasonal.

The point is that the data processing business is going to make a substantial contribution to the corporation's profits, on the order of



ILLUSTRATION BY BRUCE GILFOY

American Airlines' Crandall

AMR Corp.'s data processing business is going to make a substantial contribution to the corporation's profits, on the order of \$100 million dollars in 1986 — pretax.

have a pretty full plate in the aviation business for some time to come.

What is Max Hopper's mandate?

What we've said to Max is that we want to be a more important participant in the data processing and communications marketplace with a primary focus in commercial aviation and a secondary focus in any other industry where we have proprietary capabilities that will allow us to earn higher than average rates of return. And we've said we've got the dollars to fund those efforts.

How much money is available to him?

As much as he needs.

Can you specify a dollar amount?

Figures just don't mean anything. We're certainly prepared to spend half a billion dollars; we're prepared to spend a billion dollars in terms of capital investment if the returns are there. That is not to say we will.

The SABRE system took a number of years to show a return.

SABRE did, but we knew that marketplace very well. We had two motivations — first to generate an independent stream of earnings and second to protect the stream of earn-

\$100 million dollars in 1986 — pretax.

Companies like Security Pacific Corp., McDonnell Douglas Corp. and Boeing Co. have spun off their DP services.

Not with any notable success, I might point out.

Security Pacific Automation Co. is apparently making a little profit, but you're right.

There is no inherent good that comes from that. One of the reasons those spin-offs don't work terribly well is that the spun-off entity is still primarily a data processing arm of the original host. Max and his organization would be primarily a data processing arm of American Airlines.

So you're out there as a separate business, and now instead of being perceived to be part of the team, you're sending invoices back and forth, and there are arguments about whether Max's services are too high priced.

We may set SABRE up as an independent entity, but it would be because of various internal reasons and because of competitive reasons, not because we think necessarily that it is a wise thing to do to get at the marketplace.

FACTS AND FIGURES: AMERICAN AIRLINES' SABRE SYSTEM

Miles of data circuits: 700,000
Peak message capacity: 1,200/sec.
Fares in data base: 13.5 million
Rate of fare changes: 35,000/day
Number of terminal devices: 75,000

Do you have any problem internally at American convincing others who aren't as sold as you are on the value of information systems?

The people in top management are familiar with the technologies and are committed to the notion that we cannot remain the traditional airline. They are persuaded that sensible and aggressive use of these techniques is a good way to go.

If we don't reduce our labor cost, we're not going to be in business. The only way to reduce the percentage of the revenue dollar devoted to labor is somehow to do the job in a way that is less labor intensive. The only answer I know is the application of technology. We are driven there both by conviction and necessity.

Max and his guys spend a lot of time figuring how we can most efficiently staff the airplanes, where we can most efficiently put crew bases — a variety of things which have allowed us to make consistent progress toward wasting less manpower.

At what stage is the worldwide communications network you are building?

We have established locations for 14 nodal sites, something like a Bell central office. We have four or five of those currently installed; the others are going forward in various states of construction. It will have a tremendous amount of growth capability.

There is excess capacity being built in to handle whatever business you might decide to get into?

It's growth capability rather than excess capacity. We have grown very fast in the past and expect to grow very rapidly in the future.

Grow within American or the data processing arm specifically?

Both. The airline itself will grow very rapidly — we just took delivery of our 300th airplane, and we'll be operating 500 airplanes in five years.

During that same time, data processing will grow several ways, such as the number of functions it handles within the airline.

As you grow and diversify, you run into different competitors. Who do you foresee competing against in three to five years?

I suppose you can envision a cir-

Continued on page 58

Why are other software vendors suddenly afraid of Data Design?



We think there are a number of reasons. Perhaps it's because Data Design is increasingly recognized as one of the finest applications software companies in the world. It's a realization that has come not just to our clients, but to our competitors as well. Mainframe financial software packages from Data Design are consistently rated the best in nationally-recognized independent software surveys—year after year.

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It could be the increasing realization among

companies that vendor size and a familiar name do not guarantee happiness. Especially when software comes from "single source" or "all-things-to-all-people" vendors. They are unable to produce the type of superior product available from a firm that specializes in a specific application area. A firm like Data Design.

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Maybe what's giving them sweaty palms is the

fact that we are a model of financial stability and growth in an industry that's nervously watching revenues and profits decline. Who knows?

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NCC Preview

Chronicle of NCCs past reveals an industry in motion

By STAN GIBSON

When the forerunner of the National Computer Conference surfaced in the early 1950s, there were only a handful of computers in the world, and some knowledgeable people at that time expressed the belief that only a handful would ever be needed or built.

Now that there are millions of computers, a problem no one could have foreseen in computing's early days — connecting them with one another — has become the foremost issue.

Each year, NCC has taken the pulse of the industry at the heart of what has been called the second industrial revolution.

Although the NCC as we know it dates from 1973, the conference originated in 1951 as the twice-a-year Spring and Fall Joint Computer Conference. Normally, one show took place in an Eastern city, the other in a Western city. The show was cosponsored by several electronics trade groups that joined together in 1961 to form the American Federation of Information Processing Societies (AFIPS).

In the 1950s, the show offered attendees a glimpse of an inchoate and complex technology; in the 1960s, it spotlighted the reign of the mainframe; in the 1970s, minicomputers surged to the forefront; and in the 1980s, micros and networking are vying for center stage.

In the wake of ENIAC's birth during the U.S. World War II efforts, room-size computers emerged as a force in the worlds of business and government. The 1951 conference was dedicated to examining these computers and their significance. "At that time, it was the major way to disseminate knowledge. There were no journals," says Paul Armer of On-Line Business Systems of San Francisco, a regular attendee at the early shows.

Armer tells the story of Cuthbert Hurd, an IBM executive who was involved in his company's effort to introduce the IBM 701 during the 1950s. IBM's principal competition then came from Remington Rand Corp.'s 1103. Upon checking into his hotel to attend the conference, the IBM executive was ironically given room 1103. He requested another.

Willis Ware of the Rand Corp. in Santa Monica, Calif., served as chairman of the

1958 show held at the Ambassador Hotel in Los Angeles. He recalls the hotel provided sufficient space for all the attendees, the exhibits and the meetings. The biggest difference between the early conferences and today's? Size, says Ware, who compared the early shows' several hundred attendees

with the 84,751 people at last year's show.

By the early 1960s, the conference drew 2,000 to 3,000 people, according to Richard I. Tanaka, president of the Fullerton, Calif.-based Systonetics, Inc., who was program chairman for the 1962 spring show and general chairman of the 1964 fall

show, both held in San Francisco. Tanaka also attended shows held in Detroit, Atlantic City, Philadelphia, Washington, D.C. and Boston — locations not readily associated with NCC today.

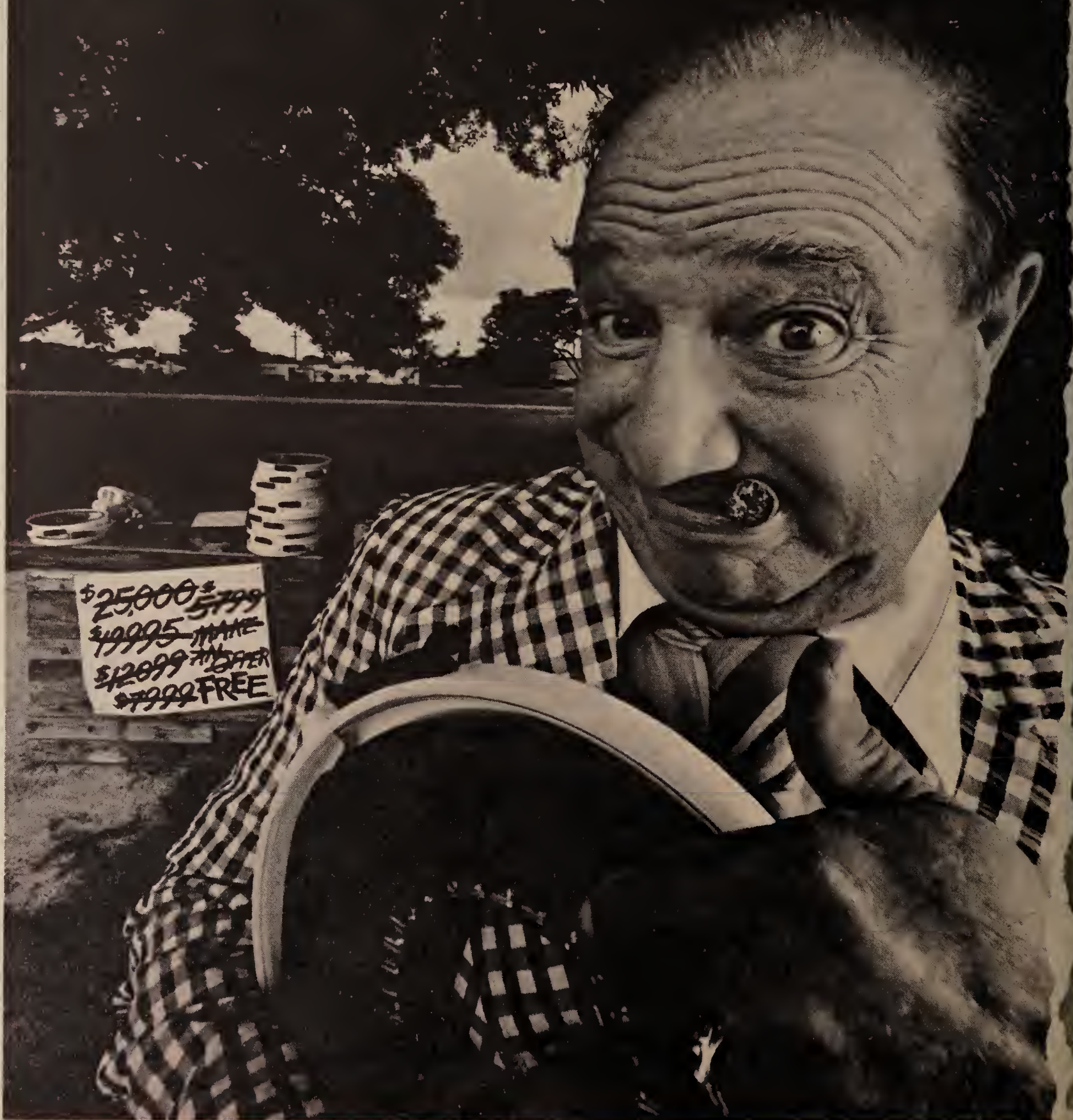
He recalls that in 1964, space at the conference was given over to General Motors Corp. for a demonstration of

a rudimentary computer-aided design system.

At the 1970 fall show in Atlantic City, Tanaka says, an exhibition of avant-garde computer art was shut down because of excessive nudity. A newspaper account of the incident blasted the show's managers as philistines.

Jerry Koory of Rand has

Resource management software without high performance standards is the most expensive kind.



Gibson is a Computerworld senior writer.

NCC Preview

worked on every show since 1963. "I wish we had better ability to predict the effect of the economy on conference attendance," he says. The 1969 spring show in Las Vegas was huge, but a cyclical turn in the economy deflated attendance at the 1970 spring show in Houston. "We have the same cycle now" Koory adds, recalling last year's no-shows.

Over the years, the shows have mirrored the state of

the country in other ways. The 1969 Las Vegas conference was marked by demonstrations by a group called Computer People for Peace, Koory recalls.

In 1973, AFIPS changed the show's name to the National Computer Conference, and the twice-yearly exhibitions became one. That year, the conference was held from June 4-8 in the

New York Coliseum, where 184 exhibitors demonstrated their products.

Running parallel with the U.S. government's antitrust case against IBM that began in 1969, Sen. Philip D. Hart (D-Mich.), in his 1973 keynote address, said the computer industry must restructure itself or face government regulation. IBM's trial would not get under way until 1975.

In 1974 in Chicago, com-

puter/government issues were again of major interest. Vice-President Gerald Ford warned in his keynote address that computers raised issues of privacy that would not be easily solved. By that time, another privacy issue, the Watergate break-in, had boiled over, and Ford was only weeks away from becoming president.

The 1976 conference returned to the Coliseum in New York. The show's high-

light was Sperry Rand Corp.'s Univac 90/70 mainframe with 542K bytes of random-access memory (RAM) that could be upgraded to 4.1M bytes of RAM.

The 1977 NCC in Dallas was the first show to recognize the existence of personal computers, and that reportedly happened only because the chairman of that year's show was Portia Isaacson, an early microcomputer enthusiast. Although micro exhibits were on display that year, AFIPS squandered them away in the convention center's basement.

The 51,000 spectators who attended NCC a year later in Anaheim, Calif., saw the micro's momentum increase, as the names of a number of micro companies, including Commodore Business Machines, Inc., Tandy Corp., North Star Computers, Inc. and Apple Computer, Inc., attracted notice. But PC companies were isolated in their own exhibit area in the Disneyland Hotel's Convention Center.

In 1980, the show again took place in Anaheim, and personal computers were still segregated. Apple brought forth its Apple III, and Atari Corp. introduced its Models 400 and 800. The micro software industry had begun to emerge in force.

In 1981, the micro display merged with the other exhibits as more than 525 vendors thronged to Chicago's McCormick Place. Commented then-president of Osborne Computer Corp. Adam Osborne, "They have moved the microcomputer from being a personal computer — a weird subsection of the industry in the basement — up into the mainstream of the industry."

In the four shows that have taken place since, economic factors — first a national recession, then the computer industry slump — have all but stolen the show from technical advances.

Perhaps the most notable aspect of last year's show was the number of companies that chose not to attend, due to what is now considered the worst slump in the history of the computer industry. Apple, Wang Laboratories, Inc., Digital Equipment Corp., Tandem Computers, Inc. and Compaq Computer Corp. were among the 50 vendors that sat out the exhibition.

Perhaps reflecting the difficulty NCC has in living up to the feverish excitement that pervaded some of the more recent shows, AFIPS officials indicate that the show is seeking to return to its original function as a forum at which computer professionals can gather to meet and become better informed, rather than as a spectacle dedicated solely to the dazzle of new products. ■

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How UCCEL's high standards translate into MVS and DOS/VSE solutions.

In the DOS/VSE environment, UCCEL helps you bridge the DOS/MVS

performance gap economically. Our *Tape/Manager* package eliminates error-prone manual tasks by automatically controlling the allocation and usage of tape files and volumes. *Space/Manager* automatically controls disk resources by allocating space efficiently, and reducing the total amount of disk space actually used. *System/Scheduler* dynamically schedules and continually monitors workload requirements, delivering a level of throughput unobtainable with manual scheduling. And our *Data Center Check-Up* involves UCCEL specialists in analyzing your center's efficiency.

UCCEL offers complete conversion software and support. *DUO* (UCC-2) allows immediate use of MVS facilities by executing native DOS and DOS/VSE programs under MVS. *EXITDOS* puts thorough pre-conversion planning and automatic code conversion at your disposal. *TRANSIT* means high-speed translation for non-IBM-to-IBM conversions. Each one is backed up with in-depth assistance from a team of high caliber conversion specialists.

In the MVS environment, our *UCC-1* package solves data management problems by protecting vital tape data. It informs you of the location of every tape in your inventory, what's on it, when it was created and when it was last used. *UCC-1/VM TAPE* extends this protection to MVS centers operating in a VM environment. *UCC-3* helps control valuable disk resources for optimum usage, reducing outlays for additional DASD. Our *FastDASD* automatically analyzes seek activity and recommends data set reorganization. *Block-Master* improves efficiency by reducing I/O activity, CPU usage and disk storage requirements while *EasyPROCLIB* reduces PROCLIB

maintenance. And we offer other storage management products, too.

The *UCC-7* family of products solves production problems in the area of automated workload scheduling, report distribution, archiving, and retrieval and communication between local and regional processing centers—all controlled online. Helping you

decrease error-prone manual processing and meet schedules no matter what jobs you're running.

Our exclusive *UCC-11* dramatically reduces the resources consumed due to reruns and restarts. It automates manual processing tasks and provides sophisticated job tracking/analysis functions that facilitate scheduling.

UCCEL software solutions help you manage any MVS data center better. *UCC-4* consolidates physical and financial inventory data, increasing management control and eliminating redundant staff activity. *UCC-8* gives managers the data necessary to plan, coordinate, analyze

and control more effectively by drawing together a complete picture of every data center event and its impact. And *UCC-9/R+* decreases hardware failures by pinpointing troublesome devices, reporting trends for each and comparing their reliability to industry averages.

Only UCCEL's high standards ensure consistent productivity.

Clearly, there are two very dramatic differences between UCCEL's resource management software and everyone else's: 1) UCCEL's extraordinarily high support standards, and 2) UCCEL's extraordinarily high productivity standards. And these are the differences that make UCCEL your data center's most productive choice. Now and later.

For MVS software information, call UCCEL Corporation at 800-527-5012. For more information on UCCEL's complete line of DOS/VSE systems software, our DOS-to-MVS and non-IBM-to-IBM conversion packages and consulting services, call UCCEL VSE & Conversion Systems at 617-426-8780. We'll show you how making our high standards your standards can ensure consistent data center productivity.

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NCC Preview

Continued from page 54

cumstance where we would compete with all of the nation's banks. I'm not sure we will be — it depends on what business we go into and who else elects to come into our business.

What you're seeing in the marketplace is really remarkable. There are all kinds of people out there selling little systems that do specialized things with airline reservations and ticketing.

All of a sudden we're competitors with 3M Corp.; J. C. Penney Co. has decided it has some proprietary capabilities and has set a course of going into the data processing/communications area. I would expect we would be a J. C. Penney competitor. American Express Co. is a very large vendor to us, a very large customer of ours and, in all probability and

increasingly in the years ahead, a competitor.

Is there a personal computer in your office?

No, but there are several in the outside offices.

Do you use one at home?

No. I frankly think that the appli-

”

'I frankly think that the application of PCs to most home tasks is ostentatious and kind of stupid. Most people don't get the return out of personal computers in personal use that they do in business.'

— Robert Crandall
AMR Corp.

cation of PCs to most home tasks is ostentatious and kind of stupid. I don't do enough things repetitively so that I can justify the I/O time. Most people, unless they play with them, don't get the return out of personal computers in personal use that they can in business.

The so-called "office of the future" is going to happen. When you

get down to the nitty-gritty, you find that although the personal computer is a nifty tool, people spend an awful lot of time running the printer. I don't know when we'll get the technology so we can use it literally in lieu of paper, but I have no doubts that will come. And there are graphics abilities which the systems just don't have yet.

Speech recognition and synthesis is another tricky technology to implement.

But coming. Max has been doing a lot of work educating me in optical scanning and reading devices.

For what use within American?

Optics could be very powerful for us in the handling of baggage and packages. You can't put a boarding pass down a slot and have it read today. But that technology is coming too, maybe in three to five years.

Robotics is enormously powerful. If you can put adequate optics together with robotics, a lot of the work we do here in handling of packages and baggages is obviously going to be robotized.

Max keeps track of all this?

He has two or three people whose full-time occupations are tracking those developments so when they get to the point where we think they are beginning to develop applications orientations, we can be there.

Max and his people have the charge of saying what's happening in software and hardware and competitive applications that we ought to be thinking of that we do not have today. His people get an appreciation of the business problem.

Today we've got a security threat to the world's commercial aviation industry. The only way we can handle the problem of matching which passenger and which bag are on the airplane is with a systems approach. Today we use preprinted bag tags. What we want to do is put on the baggage identifying label some kind of readable image that allows us to match that bag and its progress through the system and your progress so that we always know that the bag and you are on the same plane.

Similarly, we're looking at bag rooms as they may be 10 years from now. We have to have machinery to which we can talk. "OK, here's Joe's bag, now put this somewhere where you can get it back when we tell you, and we'll tell you when Joe gets on the airplane."

Talking to an automated vehicle?

When Joe gets on the airplane, maybe by inserting his smart card, the machine will say, "OK, Joe is on the airplane. Get the bag, put it in a particular container, tell me what container you've put it in so that if Joe gets off you can go and get it back off before the plane takes off." Those things take very sophisticated technologies. Try to put them out there to interface with the real world, where you're handling very large numbers of bags and people.

And you have the labor costs.

No matter how much you spend on labor, you simply can't do the job fast enough. That's the great challenge — you have to process more and more people and you have to do it in a civilized and humane way. ■

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NCC Preview

Market-specific meets luring participants from big shows

Broad-based shows cited as ineffective

By MICHAEL SULLIVAN-TRAINOR

In an attempt to account for the recent cancellations of Comdex/Winter and the Office Automation Conference (OAC) — among others — and to rationalize the decline in many remaining trade shows' popularity, some observers cite the general computer industry slump.

But the slump is not the only cause — or even the main cause — of the turmoil. According to many sources, broadly defined shows like the National Computer Conference are simply not effective in today's evolving markets.

Three specific trends lie behind the big shows' troubles:

- Major vendors — including AT&T, Burroughs Corp., Cullinet Software, Inc., Data General Corp., Digital Equipment Corp. and Wang Laboratories, Inc. — have reexamined their marketing strategies. In many cases, they have bypassed major national shows for smaller, market-specific productions.

Sullivan-Trainor is a Computerworld senior writer.

- Users' areas of interest are changing, leaving behind general concepts such as office automation and replacing them with specific technologies like voice/data integration, micro-mainframe links, digital private branch exchanges and local-area networks.

- The proliferation of computer trade shows over the last few years has forced vendors to choose among options. Exhibitors simply cannot afford to staff a booth at every show that might pertain to them.

"The everything-for-everybody shows don't work anymore," says Shelley Adelson, principal of the Interface Group, Inc., which sponsors the Comdex shows. "You can't give something to everybody."

Many observers agree that promoters must target their shows carefully — at either a market segment or a hot technology — if they expect to prosper.

The OAC was canceled in March after the technology on which it focused fell out of favor. The show's sponsor, the American Federation of Information Processing Societies (AFIPS), continues to sponsor NCC and the NCC Telecommunications Show. "It seems that office automation is no longer an easily definable term," explains AFIPS spokeswoman Katherine Stormont.

Craig Zamzow, a manager who supervises trade shows for DEC's of-

fice and information systems group, puts it another way. "Shows that have canceled, like OAC, Intech and Syntopicon, lost their focus with the attendees, and the attendance went down," he says.

In contrast, shows like the Interface Group's Interface, the International Communications Association's ICA and CW Communications, Inc.'s Communication Networks are growing because they are targeting the hot technologies involved in networking and telecommunications.

In addition, promoters are finding that vertical market shows are suffering less than general ones.

Vendors who exhibit at shows give one reason for their growing attraction to targeted shows and declining enthusiasm for general ones: Targeted shows produce better sales leads.

"In the past, we tried to attend as many large shows as possible," says Mike Mattozzi, manager of marketing services for Cullinet. "We've reevaluated that." According to Mattozzi, Cullinet finds its best leads at small, highly focused, regional shows. "You see the same number of qualified prospects come through your booth at these smaller shows as you would at the big ones," he says.

NCC, in particular, is feeling the effects of vendors' disenchantment.

A comment from Charles Lanier, trade show coordinator for communications products vendor Digital Communications Associates, Inc., helps explain why: "We dropped out of the National Computer Conference this year because it is a very broad-based show that pulls in attendees from a wide range of areas," Lanier says. "It's not well defined."

General shows also suffer from their sheer size. In this regard, they are victims of their own success, having grown too large to be effective. Size can be detrimental for vendors who are trying to compete for the attention of qualified prospects.

DEC, for example, felt that NCC's enormity worked against the vendors' efforts. "We dropped out of NCC because it's a large show where, even though you're a major vendor, you can get lost in it," Zamzow says.

To ensure that it reaches qualified prospects, DEC has turned to producing its own trade shows. The vendor attracted more than 20,000 attendees to Boston in February for its third annual Decworld.

In light of the facts, NCC's recent loss of exhibitors — from 700 in 1984 to 550 in 1985, with even fewer expected this year — may be a blessing in disguise. Ed Chapman, who manages AT&T's national exhibit planning, thinks so. "The best thing that can ever happen to the NCC is that it's getting smaller," he says. ■

AFIPS thrives on broad appeal, feels NCC can do the same

By JEFFRY BEELER

In an industry awash with professional associations representing nearly every conceivable special interest, the American Federation of Information Processing Societies (AFIPS) stands apart.

Unlike many other organizations, which cater mainly to vendors, AFIPS champions the cause of the information systems professionals who are the consumers of computing products and services.

This user orientation distinguishes AFIPS from classic trade groups like the Computer and Business Equipment Manufacturers Association and ADAPSO, which mainly serve the needs of hardware and software producers, respectively.

AFIPS is by no means the only industry organization that sees computing professionals as its chief constituency. But as cosponsor of the annual National Computer Conference, it almost certainly ranks as the most prominent such society — and the largest.

Currently celebrating its 25th anniversary, the group is an umbrella organization for 11 information processing-oriented professional associations, which collectively represent more than 250,000 members, according to John Gilbert, AFIPS confer-

ences director.

Probably the most visible of the constituent societies are the Association for Computing Machinery, the Data Processing Management Association, the IEEE Computer Society and the Society for Computer Simulation — all NCC cosponsors.

In addition to these, AFIPS embraces seven other professional groups:

- The American Society of Information Science.
- The American Statistical Association.
- The Association for Computational Linguistics.
- The Association of Education Data Systems.
- The Instrument Society of America.
- The Society of Industrial and Applied Mathematics.
- The Society for Information Display.

Formed in 1961 to represent the U.S. in the International Federation of Information Processing, AFIPS seeks to promote the welfare of both the computing profession as a whole and the individuals who work within the profession.

Toward that end, the association undertakes a number of continuing user education projects, the largest and best known of which is the annual National Computer Conference.

Although the event will never be "all things to all people," AFIPS does aim to ensure that NCC's exhibitor

roster and conference programs appeal to as broad a spectrum of computing professionals as possible, Gilbert says. By maintaining a general, horizontal format, the event "creates economies of scale that give users a once-a-year snapshot of where the industry is now and where it's headed," Gilbert maintains.

"Users can find out what's happening in the industry and learn what they need much more efficiently by going to NCC than by reading every trade publication and visiting lots of vendors individually," he adds.

In addition to helping AFIPS fulfill its mission of advancing the state of the art in information systems, NCC constitutes the federation's single largest source of revenue.

All surpluses from the show are put back into the 11 member organizations, each of which then uses the funds to finance its own activities.

As a nonprofit organization,

AFIPS does not disclose its NCC financial results, according to Gilbert.

The primary responsibility for producing the show each year rests with AFIPS' Conferences Department, which is one of the six operating groups into which the professional association is divided.

The other five departments include the Communications Department, the Government Activities Department, the Press Department, the Finance Department and the Executive Directions Department.

Even though NCC remains the centerpiece of AFIPS' yearly schedule, the federation is working hard to expand the roles of several of its other departments besides the Conferences Department. The Government Activities Department, for example, has been charged with the task of keeping the 11 constituent societies abreast of the latest technology-related developments inside Congress, according to Gilbert. ■

CORRECTIONS

The Disaster Recovery Planning service directory entry for Computer source (Product Spotlight, May 12, page 86) was inaccurate. Corrected information follows. Address: 110 MacKenan Drive, Cary N.C. 27511. Facilities provided: Hot and cold site storage. Total subscribers per center: 50 currently, 100 maximum. Additional services available: Consulting.

The last paragraph of "The high end: Performance, sophistication"

(Executive Report, May 26, page 59) should have read as follows:

High-resolution scanners and scanning systems at the 1,000 by 1,000 dot/in. level are available from Imagitex, Inc. (\$25,000 to \$170,000), ECRM (\$50,000) and Eikonix Corp. (\$35,000). Typesetters range from the mid-range Linotron 202/300 (\$35,000 to \$45,000), Compugraphic 8600 (\$60,000) and Autologic, Inc. offerings (\$60,000 to \$150,000) to the high-end Information International Co. and Hell Graphics Systems, Inc. lines (\$150,000 to \$250,000).

Beeler is a Computerworld West Coast correspondent.

NCC Preview

TECHNICAL SESSIONS

MONDAY

"From Programming to Software Engineering"

DAY: Monday

TIME: 1:30 p.m. to 3 p.m.

PLACE: Pavilion 2

CHAIR: Jean Paul Jacob, IBM Almaden Research Center

Panelists will discuss whether programmers can live up to companies' desire for high-quality software that meets specifications and gets delivered on time and within cost.

"Building a \$350,000,000 Computer Company"

DAY: Monday

TIME: 1:30 p.m. to 3 p.m.

PLACE: Pavilion 10

CHAIR: John Singleton, Security Pacific Automation Co.

Singleton will discuss two concepts — the strategic planning pyramid and management by results — that help MIS directors understand and improve their organizational roles.

"Can Software Ever Meet Legislated Warranties?"

DAY: Monday

TIME: 1:30 p.m. to 3 p.m.

PLACE: Pavilion 1

CHAIR: Ed Bride, *Software News*

Panelists will argue whether software warranties can be legislated and whether it is economically practical.

"Justifying Investments in End-User Computing"

DAY: Monday

TIME: 1:30 p.m. to 3 p.m.

PLACE: Pavilion 11

CHAIR: N. Dean Meyer, Dean Meyer & Associates

Speakers will present case studies of end-user computing and will present guidelines for measuring payback.

"Contributions of AI to Education"

DAY: Monday

TIME: 1:30 p.m. to 3 p.m.

PLACE: Ballroom G

CHAIR: Wayne Harvey, Stanford Research Institute

Speakers will explain how artificial intelligence can improve computers as learning tools. They will survey the use of theorem provers and symbolic computation programs.

"Integrated Services Digital Network"

DAY: Monday

TIME: 1:30 p.m. to 3 p.m.

PLACE: Pavilion 4

CHAIR: Philip Beidelman, Western Telecommunications Consulting

This session will help managers understand ISDN.

"Local-Area Networks"

DAY: Monday

TIME: 1:30 p.m. to 3 p.m.

PLACE: Ballroom F

CHAIR: J. Edward Snyder, TRW, Inc.

The panelists will discuss basic local-area net design concepts and demonstrate how their companies' products apply to day-to-day situations.

"Ergonomics and the Automated Office"

DAY: Monday

TIME: 1:30 p.m. to 3 p.m.

PLACE: Ballroom E

CHAIR: Robert Wilson, Hamilton-Sorter

Panelists will offer information about

ergonomically designed work environments, emphasizing national trends.

"Multivendor Environment — the Users' Perspective"

DAY: Monday

TIME: 1:30 p.m. to 3 p.m.

PLACE: Pavilion 5

CHAIR: Richard Price, Peabody Holding Co.

Panelists will discuss their corporations' experiences with multiple vendors.



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NCC Preview

"Telecommunications in the Information Age"

DAY: Monday

TIME: 3:30 p.m. to 5 p.m.

PLACE: Pavilion 2

CHAIR: Richard T. Liebhaber, MCI Communications Corp.

Liebhaber will discuss how companies can use advanced digital transmission and switching technology to promote and support efficiency.

"Models, Methods and Tools for Software Development"

DAY: Monday

TIME: 3:30 p.m. to 5 p.m.

PLACE: Pavilion 10

CHAIR: C. V. Ramamoorthy, University of California at Berkeley

The speakers will emphasize the need for formalism, methodology and quantitative measurement in software development and maintenance.

"Computer-Supported Decision Making in the Real Estate Industry"

DAY: Monday

TIME: 3:30 p.m. to 5 p.m.

PLACE: Ballroom E

CHAIR: Marc Swenson, Homart Development Co.

Panelists will discuss how to use computer-based decision support tools to manage investment risk, optimize income and manage investment portfolios.

"The 4-4-4 Challenge: Implications of Superworkstations for Information Systems Management"

DAY: Monday

TIME: 3:30 p.m. to 5 p.m.

PLACE: Pavilion 10

CHAIR: Brian Blackmarr, Brian Blackmarr and Associates

Workstations that operate at 4 million instructions per second, store 400M bytes of data and cost less than \$4,000 lie just over the horizon.

This session explores how they will affect the future of MIS by challenging the economics of mainframe computing.

"Issues with Large-Scale Implementations"

DAY: Monday

TIME: 3:30 p.m. to 5 p.m.

PLACE: Pavilion 11

CHAIR: Michael Heschel, Baxter Travenol Labs, Inc.

Large-scale computer systems are difficult to implement, but they can have high payoffs for users. The speakers will discuss their companies' own projects to provide practical guidance for others.

"Service Issues"

DAY: Monday

TIME: 3:30 p.m. to 5 p.m.

PLACE: Ballroom G

CHAIR: Paul Vilandre, Convergent Technologies, Inc.

Speakers will discuss the service issues that are critical to the continued operation of computer systems.

"The Marriage of Expert Systems and Simulation"

DAY: Monday

TIME: 3:30 p.m. to 5 p.m.

PLACE: Pavilion 1

CHAIR: Norman R. Nielsen, SRI International, Inc.

Panelists will explain how knowledge-based programming tools will come to play a role in the evolution of computer-based simulation. They will argue that today's tools can be expanded to address system modeling problems for industry.

"Role of the Information Systems Manager as a Change Agent"

DAY: Monday

TIME: 3:30 p.m. to 5 p.m.

PLACE: Ballroom F

CHAIR: Allen Smith, Atlantic Richfield Co.

Smith will discuss the changing role of MIS and will suggest practical ways to change the mission and the methods.

"New Direction in Printer Technology — The Age of Electronic Imaging"

DAY: Monday

TIME: 3:30 p.m. to 5 p.m.

PLACE: Pavilion 5

CHAIR: Charles Pesko, C. A. Pesko Associates, Inc.

Pesko will explore trends in the development of printers that are changing hard-copy business communications.

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NCC Preview

TECHNICAL SESSIONS

TUESDAY

"Changing Career Paths for IS Professionals and Managers"

DAY: Tuesday

TIME: 8:30 a.m. to 10 a.m.

PLACE: Ballroom G

CHAIR: Kathy Richards, Fireman's Fund Insurance Co.

A career development counselor will engage MIS managers in a dialogue about making the most of current career options.

*"Contemporary Applica-**tions of Speech Technology"*

DAY: Tuesday

TIME: 8:30 a.m. to 10 a.m.

PLACE: Pavilion 11

CHAIR: Stanley Goldstein, Media Dimensions

Panelists will discuss applications of voice I/O in office

and factory automation and other applications.

"Understanding Parallelism and Its Use in Supercomputers"

DAY: Tuesday

TIME: 8:30 a.m. to 10 a.m.

PLACE: Pavilion 5

CHAIR: Paul Schneck, Supercomputing Research Center

Speakers will explain the technical aspects of parallelism and will explore the technology's implications for users of supercomputers.

"Do We Have Pacemakers in Software? Cobol? Unix? Ada?"

DAY: Tuesday

TIME: 8:30 a.m. to 10 a.m.

PLACE: Pavilion 4

CHAIR: Jean E. Sammet, IBM

Speakers will explain why Cobol, Unix and Ada hold particular promise.

"International Networking"

DAY: Tuesday

TIME: 8:30 a.m. to 10 a.m.

PLACE: Pavilion 10

CHAIR: William C. Braseull, Tandem Computers, Inc.

Braseull will describe the state of the art in international networks and will orchestrate a live demonstration.

"Are User Applications Programmers Becoming Obsolete?"

DAY: Tuesday

TIME: 8:30 a.m. to 10 a.m.

PLACE: Pavilion 1

CHAIR: Tom Rush, Coopers & Lybrand

Panelists will discuss whether fourth-generation languages and applications packages eliminate end users' needs for applications programmers.

"Expert Systems: Mainframe or Microcomputer?"

DAY: Tuesday

TIME: 8:30 a.m. to 10 a.m.

PLACE: Pavilion 2

CHAIR: Robert Anderson, Rand Corp.

Panelists will explore the use of expert systems in mainframe, minicomputer and microcomputer environments. They will focus on the question of whether microcomputer expert systems are valid business tools.

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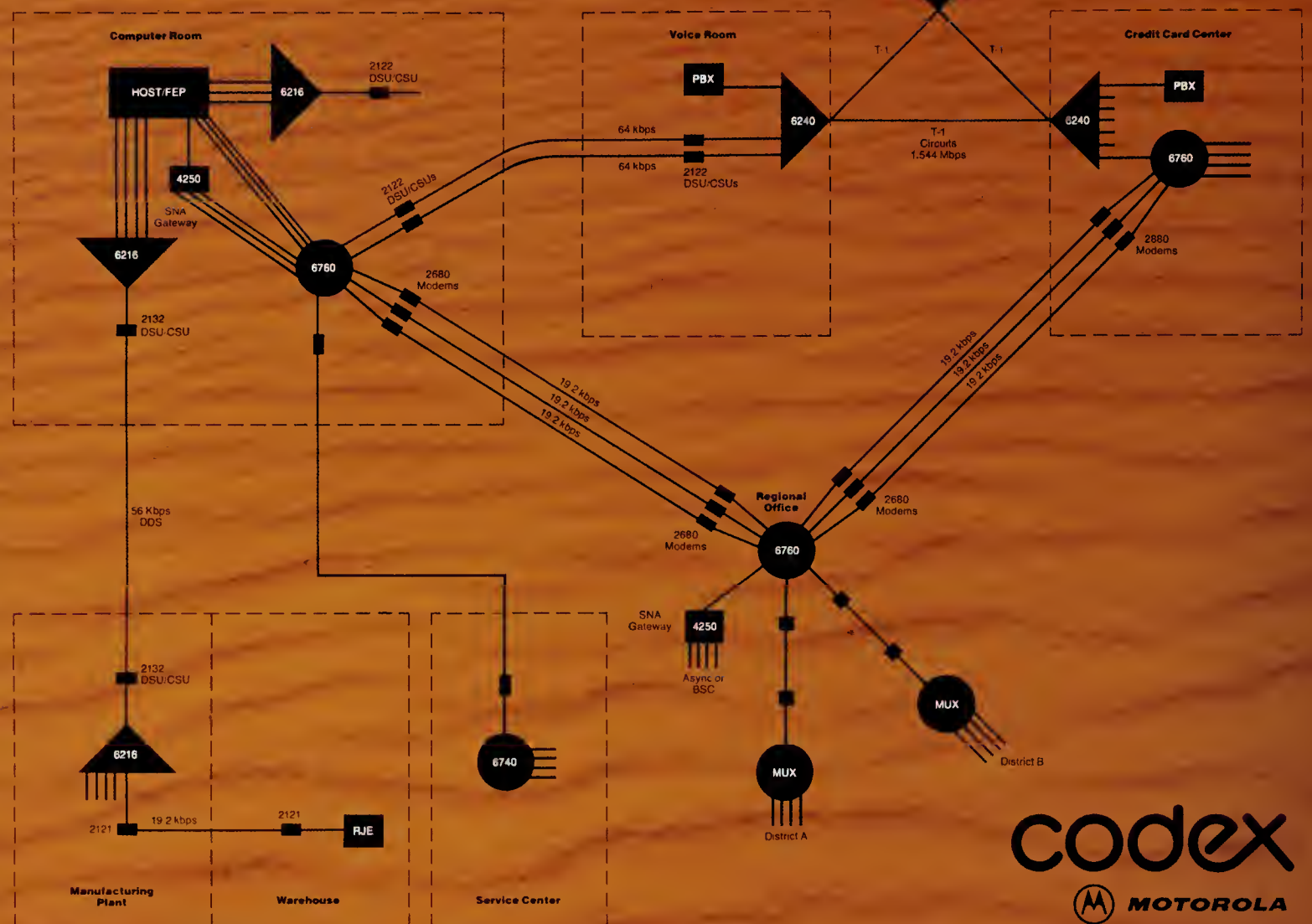
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- Provides "toll" quality for voice transmission with ADPCM voice modules.
- Allows channels to be dynamically allocated and automatically reconfigured from an operator terminal.
- Adds networking flexibility for point-to-point and multipoint applications.
- Ensures maximum system uptime with automatically redundant components.

Codex 6216 Digital Multiplexer

- Combines up to 16 asynchronous and synchronous data channels over high speed DDS circuits for dramatic cost savings.
- Offers selectable aggregate transmission rates from 48 kbps to 80 kbps.
- Requires minimal bandwidth overhead resulting in greater link efficiency.
- Provides single site network management with complete software control and up to four programmable configurations.
- Ensures maximum system uptime with automatically-switched redundant hardware.
- Acts as a combination multiplexer/switch by routing channels to different destinations.

Codex 6760 Distributed Communications Processor

- Delivers 40,000 characters per second of continuous asynchronous, bisynchronous and SDLC/HDLC throughput with adaptive data compression.
- Accepts 256 simultaneous calls for large-scale communications.
- Transmits at aggregate link rates up to 64 kbps.
- Supports four group band trunks or sixteen 19.2 kbps links.
- Adds flexibility to expand from point-to-point applications to multipoint applications with as many as 127 full networking nodes.
- Offers central site network control and testing with downline loadable software.
- Provides access to public packet switching networks with an X.25 Level 3 interface.
- Ensures maximum network uptime with automatic rerouting and transparently redundant hardware.

Codex 6740 Distributed Communications Processor

- Supports statistical multiplexing of asynchronous and SDLC/HDLC protocols concurrently.
- Simplifies networks with async switching/contention package.
- Supports up to 64 terminals per node for medium size networks, including

two wideband links at 64 kbps or eight 9.6 kbps links.

- Provides flexible support for point-to-point applications as well as full networking for three nodes.
- Provides central site network control and testing with downline loadable software and remote datascope capability.
- Ensures maximum uptime with optional automatic redundancy for master logic and power supply.
- Extends the advantages of networking to small configurations with prices starting at \$6000.

Codex SNA Gateway

- Eliminates parallel networks by providing widespread access to SNA applications by asynchronous and BSC devices concurrently.
- Lowers operating costs substantially by eliminating unnecessary Front End Processor software, frees up communications ports and preserves investments in non-SNA devices.
- Extends SNA's Communications Network Management capabilities to non-SNA devices by responding to NPDA commands.
- Insures against obsolescence with software design and allows for user-programmable application flexibility.
- Supports direct, leased and dial-up connections for central and remote sites.

NCC Preview

Continued from page 62

"Electronic Publishing, With or Without Paper"

DAY: Tuesday

TIME: 8:30 a.m. to 10 a.m.

PLACE: Ballroom E

CHAIR: Contance Greaser, Rand Corp.

In a series of case studies, panelists will discuss the use of electronic equipment to produce traditional paper publications and on-line data bases.

"Change is Routine for Information Systems"

DAY: Tuesday

TIME: 8:30 a.m. to 10 a.m.

PLACE: Ballroom F

CHAIR: Kathy Brittain White, University of North Carolina

Speakers will describe how various organizations implement the MIS function and will suggest strategies for using technology as a strategic tool.

"Fourth-Generation Languages and Application Generators"

DAY: Tuesday

TIME: 10:30 a.m. to noon

PLACE: Pavilion 2

CHAIR: A. Winsor Brown, Douglas Aircraft Co.

Speakers will define fourth-generation languages, applications generators and other programming tools and will illustrate the productivity gains they enable. The session will also examine programming tools' effects on local-area networks.

"Departmental Computing: Panacea or Solution?"

DAY: Tuesday

TIME: 10:30 a.m. to noon

PLACE: Pavilion 4

CHAIR: George Colony, Forrester Research, Inc.

Colony and his panelists will try to determine whether departmental computing is merely a concept that helps minicomputer vendors sell equipment or truly a new direction.

"Image Processing Technology"

DAY: Tuesday

TIME: 10:30 a.m. to noon

PLACE: Pavilion 5

CHAIR: Jack Walsh, Integrated Strategies, Inc.

This session will review the evolution of various optical-disk technologies and explain their practical uses.

"An AI Approach to Document Preparation"

DAY: Tuesday

TIME: 10:30 a.m. to noon

PLACE: Pavilion 10

CHAIR: Martha Evens, Illinois Institute of Technology

Speakers will describe systems that use artificial intelligence techniques to analyze the grammar or meaning of text.

"Networking: A Management Overview"

DAY: Tuesday

TIME: 10:30 a.m. to noon

PLACE: Pavilion 11

CHAIR: Joseph Clark, Joseph Clark and Co.

Panelists will attempt to sort out the meanings of the terms "networking," "telecommunications" and "data communications." They will also discuss some of networking's implications.

"Do Current Software Protection and Pricing Practices Constitute a Rape of Users?"

DAY: Tuesday

TIME: 10:30 a.m. to noon

PLACE: Pavilion 1

CHAIR: Larry Welke, International Computer Programs

Speakers will explain how the tremendous variance between variable costs and selling price may be the root of users' desire to copy programs illegally.

"Inventing the Future: Competitive Advantage"

DAY: Tuesday

TIME: 10:30 a.m. to noon

PLACE: Ballroom F

CHAIR: M. Victor Janulaitis, Positive Support Review

Speakers will explain how specific companies are using automation to gain competitive advantage.

Continued on next page

"I can't, I'm wearing magnetic underwear."

—Computer backup excuse #685

Doing computer backup really gets under people's skin.

They'll do anything to get out of doing it, because backing up is so utterly boring.

But not doing it can definitely be a matter of getting your education at the college of hard knocks.

We're reminded of the PhD candidate in biology who did hunger research for his doctoral thesis without backing it up.

He had data from a year's worth of injecting and weighing rats stored on the disk. The computer crashed, the rat data was erased from memory,

and he had it to do all over.

Back to the rat race.

So do your backup. Floppies if you don't have much memory. Or, if you have 5 to 10 Mbytes or over, on data cartridge—a 3M developed technology whose time has come.

For example, the space-saving 3M DC 2000 data cartridge holds 40 Mbytes

of information. You'd need 80 floppies to store that much. And it can fit in your breast pocket.

To read more true-to-life "horror stories" of people who didn't back up, ask your computer products dealer for our leaflet "Horror Stories."

And you can forget about the polarity of your skivvies.

When you
run out of
excuses.™



NCC Preview

TECHNICAL SESSIONS

TUESDAY

(continued from previous page)

"Vendor Service and Support: What's Important?"

DAY: Tuesday

TIME: 10:30 a.m. to noon

PLACE: Ballroom D

CHAIR: Alexia Martin, Seybold Office Computing Group

Speakers will explore controversial service issues and address users' alternatives to vendor support.

"Who Really Is the Boss?"

DAY: Tuesday

TIME: 1:30 p.m. to 3 p.m.

PLACE: Pavilion 2

CHAIR: Paul Dali, Regis McKenna, Inc.

Dali will discuss MIS executives' responsibilities to future innovation.

"Can Software Help Software Development? The Case for Expert Systems"

DAY: Tuesday

TIME: 1:30 p.m. to 3 p.m.

PLACE: Pavilion 10

CHAIR: Barbara Brown, IBM's Almaden Research Center

Speakers will debate whether programmers' knowledge can be captured in expert systems.

"Network Management"

DAY: Tuesday

TIME: 1:30 p.m. to 3 p.m.

PLACE: Pavilion 5

CHAIR: Robert Linebarger, Brigham Young University

Speakers will explain the basic tools and issues of network management.

"Cabling Systems and Micro-Mainframe Communications"

DAY: Tuesday

TIME: 1:30 p.m. to 3 p.m.

PLACE: Pavilion 4

CHAIR: Sidney Harris, Georgia State University

Speakers will review American Express' cabling strategy and look at software-based communications alternatives.

"The Future of CAD/CAM Productivity"

DAY: Tuesday

TIME: 1:30 p.m. to 3 p.m.

PLACE: Pavilion 11

CHAIR: Joseph Harrington, Arthur D. Little, Inc.

Speakers will explain specific methods for implementing computer-aided design and manufacturing.

"Chief Information Officer: Success or Failure?"

DAY: Tuesday

TIME: 1:30 p.m. to 3 p.m.

PLACE: Ballroom F

CHAIR: Nancy Markle, Arthur Young

Speakers will gauge the corporate information officer's role in business.

"Positive Experiences with Software Metrics"

DAY: Tuesday

TIME: 1:30 p.m. to 3 p.m.

PLACE: Pavilion 1

CHAIR: Michael Evangelist, Microelectronics and Computer Technology Corp.

Speakers will discuss portability, reliability and other qualities that have been proposed as appropriate measures of software.

"News from Research Programs in End-User Computing"

DAY: Tuesday

TIME: 1:30 p.m. to 3 p.m.

PLACE: Ballroom E

CHAIR: Tora Bikson, Rand Corp.

Panelists will analyze the results of three research projects that explored issues of end-user computing.

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The fastest micro COBOL.
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IBM mainframe COBOL compatibility.
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"Personal Computers to Office Automation: Building a System"

DAY: Tuesday

TIME: 3:30 p.m. to 5:00 p.m.

PLACE: Pavilion 2

CHAIR: Amy Wohl, Wohl Associates

Wohl will argue that the office of the future is being built from the bottom up as hundreds and thousands of personal computers get connected to existing OA systems.

"Deregulation and Automation — The Financial Industry"

DAY: Tuesday

TIME: 3:30 p.m. to 5:00 p.m.

PLACE: Ballroom F

CHAIR: John Parady, Consultant

Panelists will explore where deregulation and competition are leading the financial industry and will discuss computers and networks as strategic tools.

"Will New Architectures Save the Minicomputer Industry?"

DAY: Tuesday

TIME: 3:30 p.m. to 5:00 p.m.

PLACE: Pavilion 10

CHAIR: Craig Symons, Gartner Securities Corp.

Speakers will try to clarify the advantages and disadvantages of parallel processing and reduced instruction set computing architectures.

"Software Development Management: The Challenge"

DAY: Tuesday

TIME: 3:30 p.m. to 5:00 p.m.

PLACE: Pavilion 4

CHAIR: Peter Freeman, University of California at Irvine

Panelists will discuss both broad issues and specific techniques for managing software development.

"AI Microcomputer Applications in CAD/CAM"

DAY: Tuesday

TIME: 3:30 p.m. to 5:00 p.m.

PLACE: Pavilion 5

CHAIR: I. William Salmon, Saltek Services

Speakers will discuss current applications of artificial intel-

ligence in computer-aided design and manufacturing.

"Case Studies"

DAY: Tuesday

TIME: 3:30-5:00 p.m.

PLACE: Pavilion 11

CHAIR: Gordon Lew, American Airlines

Panelists will discuss several user companies' successful

networks as a means of evaluating the progress of communications technology.

"Lifecycle Data Bases for Buildings"

DAY: Tuesday

TIME: 3:30 p.m. to 5:00 p.m.

PLACE: Ballroom F

CHAIR: Curtis C. Pounds, McDonnell Douglas Architec-

tural, Engineering & Construction Systems Co.

Panelists will look at the benefits of integrating data throughout the life of a facility — from design through maintenance.

"Semiconductor Directions in Connectivity"

DAY: Tuesday

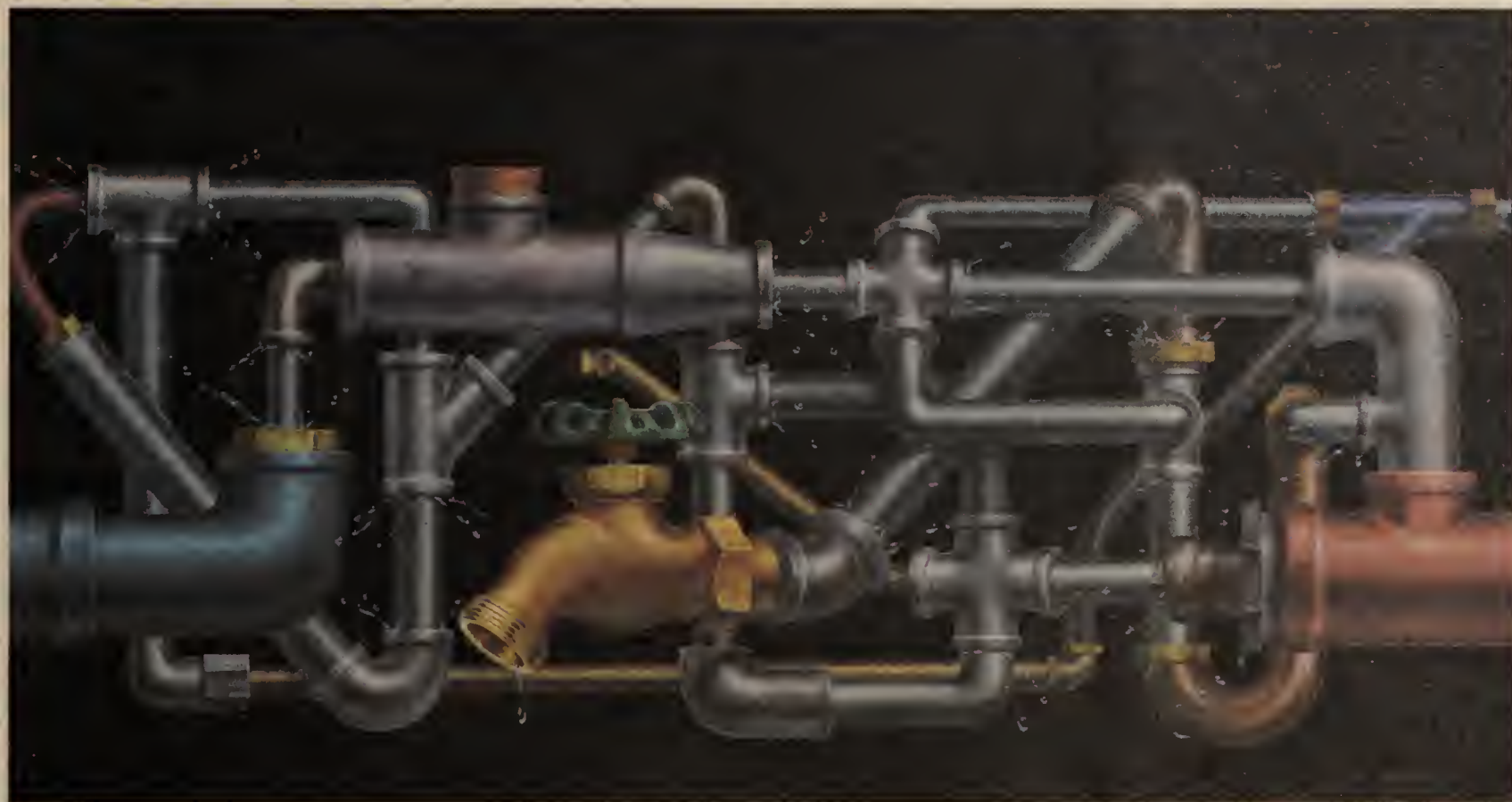
TIME: 3:30 p.m. to 5:00 p.m.

PLACE: Ballroom G

CHAIR: Bobbie Fox, Intel Corp.

Fox will lead a roundtable discussion of trends in very large-scale integration implementation as they apply to office users' connectivity needs.

Continued on next page



UNTIL NOW, COMBINING SYNC AND ASYNC NETWORKS HAS BEEN A PRETTY AWKWARD AFFAIR.

CASE's DCX Multiplexers blend your sync and async traffic into one datastream without spilling a drop.

Now it's easy to pipe sync and async data down the same leased lines. And make room for more traffic in the process.

With CASE DCX Multiplexers.

The DCX system eliminates the need for out-board protocol converters, extra wiring, separate power supplies and other makeshift "solutions" that can make a plumber's nightmare of your data network.

With DCX multiplexers, you can pipe DEC peripherals into an IBM network. Exchange data between an IBM host and an HP system in another country. Mix async and SNA/SDLC or bisync traffic without polluting your data or slowing your flow. You can even use your 3270 sync terminal to access an async host.

With *integral protocol conversion*, DCX pumps your sync traffic through a *32-port gateway* that doesn't tie up a single comm line. Among other things, this feature allows inexpensive async terminals, including printers, to act like synchronous terminals for your IBM host.

With *poll-elimination*, DCX cuts out the polling messages that clog up leased lines on IBM networks. This reduces the volume of sync traffic by up to 80%.

Which makes room for all kinds of pure and unpolluted data — including async traffic like interactive graphics, CAD imagery and additional control units. All without degradation to IBM or non-IBM users.

In fact, DCX benefits read like a DP/MIS wish list: dynamic port selection, easy access to X.25 packet switched networks and outside IBM hosts, simple file transfer, security. Even network management.

With DCX, your network is completely *future-proof*. Because the DCX design is so flexible and open-ended it can grow and change just as fast as you do.

Your network can start with a simple 4-line point-to-point mux — and evolve to include everything from LANs to international data networks.

One CASE customer has grown a DCX network that links more than 28,000 terminals to more than 100 computers in more than 50 countries. And that's only half the potential capacity of the DCX system.

If you're ready to pump more different kinds of data down fewer pipes with less pollution, call CASE toll-free at 800-824-4000, extension 326.

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NCC Preview

TECHNICAL SESSIONS

WEDNESDAY

"Uncertainty in Intelligent Systems"

DAY: Wednesday

TIME: 8:30 a.m. to 10 a.m.

PLACE: Pavilion 2

CHAIR: Ronald Yager, Iona College

Speakers will discuss current, ad hoc approaches to managing uncertainty in expert systems and will propose an alternative approach.

"Can/Should Data Processing Control PC and Information Center Architecture and Usage?"

DAY: Wednesday

TIME: 8:30 a.m. to 10 a.m.

PLACE: Pavilion 1

CHAIR: Paul Rosenthal, Coopers & Lybrand

Speakers will discuss whether DP should control end-user computing.

"Emerging Storage Technologies and Architectures — Judging Real Availability for Future Systems"

DAY: Wednesday

TIME: 8:30 a.m. to 10 a.m.

PLACE: Pavilion 5

CHAIR: James Moore, Dataquest, Inc.

Moore and a panel of speakers will review trends in storage devices and look at the future of high-capacity, high-performance disk subsystems; optical disk systems; and emerging architectures.

"Conferencing"

DAY: Wednesday

TIME: 8:30 a.m. to 10 a.m.

PLACE: Pavilion 10

CHAIR: Thomas House, University of Southern California

Speakers will present various types of electronic conferencing and give examples of situations in which each type of conferencing makes sense.

"Managing the Training Function"

DAY: Wednesday

TIME: 8:30 a.m. to 10 a.m.

PLACE: Ballroom E

CHAIR: Charles Hoerner, Information Technology Consulting

Speakers will explain how managers can get the most out of the money they spend for training.

*"Graphics Workstation**Technology Trends"*

DAY: Wednesday

TIME: 8:30 a.m. to 10 a.m.

PLACE: Pavilion 11

CHAIR: Carl Machover, Machover Associates

Speakers will examine the many products that can be considered graphics work-

stations.

"Finally, Shoes for the Cobbler's Children"

DAY: Wednesday

TIME: 8:30 a.m. to 10 a.m.

PLACE: Ballroom F

CHAIR: Richard Carpenter,

Intech

Speakers in this session will present a framework for an analyst's workbench — a collection of sophisticated programming tools.



NCC Preview

"Decision Support Systems — Myth or Reality?"

DAY: Wednesday

TIME: 8:30 a.m. to 10 a.m.

PLACE: Ballroom G

CHAIR: Oscar Bilodeau, Humphreys & Associates

Speakers will distinguish decision support tools from production data bases.

"Views and Perspectives of the Future of Data Bases and Graphics"

DAY: Wednesday

TIME: 8:30 a.m. to 10 a.m.

PLACE: Pavilion 4

CHAIR: Gerald Marrone, Citi-corp

Speakers will argue that without the integration of data bases and graphics, end-user computing will not fulfill its goals.

"Are you Keeping Pace with the Future?"

DAY: Wednesday

TIME: 10:30 a.m. to noon

PLACE: Pavilion 2

CHAIR: Paul Dali, Regis McKenna, Inc.

Speakers will explore leading-edge technologies.

"Optical Disks and Large**Document Image Systems"**

DAY: Wednesday

TIME: 10:30 a.m. to noon

PLACE: Pavilion 10

CHAIR: Mike Alsup, Arthur Andersen & Co.

Speakers will explore the state of the art in large-document image management.

"Software Maintenance: Observing the Professionals"

DAY: Wednesday

TIME: 10:30 a.m. to noon

PLACE: Pavilion 1

CHAIR: Nicholas Zvegintzov, "Software Maintenance News"

Speakers will discuss what managers can learn by observing the methods of software professionals.

"Information Center Case Study — Measuring Success"

DAY: Wednesday

TIME: 10:30 a.m. to noon

PLACE: Ballroom E

CHAIR: Jerome Thode, Deloitte Haskins & Sells

Panelists will discuss whether information centers make users more productive.

"Electronic Mail"

DAY: Wednesday

TIME: 10:30 a.m. to noon

PLACE: Pavilion 4

CHAIR: Richard Gunther, Ontyme Systems, McDonnell Douglas Information Systems Group

Speakers will attempt to define some standard parameters for E-mail and will review several commercially available systems.

"Computer Politics and Policies"

DAY: Wednesday

TIME: 10:30 a.m. to noon

PLACE: Ballroom F

CHAIR: John Gosden, The Equitable

Panelists will discuss some of the issues that innovations in technology have raised and our political system has failed to address.

"How Much Computer for the Analytical Job?"

DAY: Wednesday

TIME: 10:30 a.m. to noon

PLACE: Pavilion 11

CHAIR: John Mazzola, McDonnell Douglas Information Systems Group

Panelists will examine how much power users need for analytical processing.

First Talkie Left Us Speechless.

The year was 1927 and New York's chilly October was about to get a blast of Hollywood heat. *The Jazz Singer* sizzled and left us wide-eyed watching the magic of Al Jolson.

We were introduced to the unbelievable. And it was the beginning of a wondrous, new era that made the silent movie look just plain dull.

We were talking about talkies.

Keeping in mind the movie industry's evolution, its technological leaps that have become an accepted fact of life, we'd like to introduce you to a service that will inevitably become a standard in maintaining complex voice and data communications systems.

Introducing Communications Service Assurance from PacTel Spectrum Services.

A service every MIS director and telecommunications manager wanted but refused to believe in. "Wish list thinking," they said.

And wish list thinking is what we're offering.

Communications Service Assurance represents a single source for problem detection, diagnosis and preventive monitoring, as well as expediting restoration of your corporate communications. It helps with expansion and alteration and gives you customized services.

Communications Service Assurance provides a systematic approach to improving your system performance. You're able to concentrate on strategic MIS responsibilities instead of playing catch-up and reacting to the hassle of day-to-day problems plaguing your system.

Communications Service Assurance can be applied to any equipment, any protocols, at any site.

It incorporates diagnostic hardware and software.

It delivers teams of experienced test engineers from diversified backgrounds.

It accesses a unique system inventory data base.

It involves an ongoing industry relations program.

Remember, this is a service. We sell no hardware, lease no lines and repair no equipment.

What we do sell is increased reliability, productivity, bottom line cost-effectiveness and any level of expertise available 24 hours a day (we never close).

We're a wish that's a reality. We're a service that will become as important and accepted as the first talkie.

And soon, you'll be talking about Communications Service Assurance.

For further information, please call 800-446-4321. Or you can write directly, PacTel Spectrum Services, 100 Pringle Avenue, Suite 750, Walnut Creek, CA 94596, attention N. Floyd, Marketing Director.

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Photo courtesy of The Silver Screen.

NCC Preview

SCHEDULE AT A GLANCE

Monday, June 16			
Exhibit Hours 10 a.m. to 6 p.m.			
Program Track	9:30 a.m.	1:30 p.m. to 3 p.m.	3:30 p.m. to 5 p.m.
Artificial Intelligence	Keynote Address Robert L. Crandall Chairman <i>AMR Corp.</i> <i>(parent company of American Airlines)</i> <i>Hilton Ballroom</i>	Contributions of AI to Education Wayne Harvey Stanford Research Institute (SRI) Ballroom G	The Marriage of Expert Systems and Simulation Norman R. Nielson SRI International, Inc. Pavilion 1
Case Studies		Building A \$350,000,000 Computer Company* John Singleton Security Pacific Automation Co. Pavilion 10	Issues with Large-Scale Implementations Michael Heschel Baxter Travenol Labs, Inc. Pavilion 11
Controversy		Can Software Ever Meet Legislated Warranties? Ed Bride Software News Pavilion 1	
Cost Analysis			
Educational and Societal Issues		Ergonomics and the Automated Office Robert Wilson Hamilton-Sorter Co. Ballroom E	
End-User Computing		Justifying Investments in End-User Computing N. Dean Meyer Dean Meyer and Associates Pavilion 11	The 4-4-4 Challenge: Implications of Superworkstations for Information Systems Management Brian Blackmarr Brian Blackmarr and Associates Pavilion 4
Engineering			
Hardware		Multivendor Environment — the Users' Perspective Richard Price Peabody Holding Co. Pavilion 5	Service Issues Ballroom G New Direction in Printer Technology — The Age of Electronic Imaging Pavilion 5
Management			Role of the Information Systems Manager as a Change Agent Allen Smith Atlantic Richfield Co. Ballroom F
Marketing Communications		Pushing the Limits of Creativity in Marketing Kenneth Bahn Virginia Polytechnic Institute and State University Ballroom D	Financial Management in Agencies Susan A. Thomas Franson & Associates, Inc. Ballroom D
Networking		Integrated Services Digital Network Pavilion 4 Local-Area Networks Ballroom F	Telecommunications in the Information Age* Richard T. Liebhaber MCI Communications Corp. Pavilion 2
Software		From Programming to Software Engineering* Jean Paul Jacob IBM Almaden Research Center Pavilion 2	Models, Methods and Tools for Software Development* C. V. Ramamoorthy University of California at Berkeley Pavilion 10
Trends			Computer-Supported Decision Making in the Real Estate Industry Mark Swenson Homart Development Co. Ballroom E

* Featured session

CW chart compiled by Laura Fredrickson

Information provided by the American Federation of Information Processing Societies

NCC Preview

Tuesday, June 17

Exhibit Hours 10 a.m. to 6 p.m.

Program Track	8:30 a.m. to 10 a.m.	10:30 a.m. to Noon	1:30 p.m. to 3 p.m.	3:30 p.m. to 5 p.m.
Artificial Intelligence	Expert Systems: Mainframe or Microcomputer? Robert Anderson <i>Rand Corp. Institute for Research on Interactive Systems</i> Pavilion 2	An AI Approach to Document Preparation Martha Evens <i>Illinois Institute of Technology</i> Pavilion 10		AI Microcomputer Applications in CAD/CAM I. William Salmon <i>Saltek Services</i> Pavilion 5
Case Studies	Electronic Publishing, With or Without Paper Constance Greaser <i>Rand Corp.</i> Ballroom E		Chief Information Officer — Success or Failure Nancy Markle <i>Arthur Young</i> Ballroom F	
Controversy	Are User Applications Programmers Becoming Obsolete? Tom Rush <i>Coopers & Lybrand</i> Pavilion 1	Do Current Software Protection and Pricing Practices Constitute a Rape of Users? Larry A. Welke <i>International Computer Programs, Inc.</i> Pavilion 1		Are VDTs Injurious to Your Health? Bonnie Johnson <i>Aetna Life & Casualty Co.</i> Pavilion 1
Cost Analysis				
Educational and Societal Issues		Educational Telecommunications Judith Johns Hubner <i>National Commission on Industrial Innovation</i> Ballroom E		
End-User Computing	Changing Career Paths for IS Professionals and Managers Kathy Richards <i>Fireman's Fund Insurance Co.</i> Ballroom G	Vendor Service and Support — What's Important? Alexia Martin <i>Seybold Office Computing Group</i> Ballroom D	News from Research Programs in End-User Computing Tora K. Bikson <i>Rand Corp.</i> Ballroom E	Personal Computers to Office Automation: Building a System* Amy Wohl <i>Wohl Associates</i> Pavilion 2
Engineering			The Future of CAD/CAM Productivity Joseph Harrington <i>CIM Group, Arthur D. Little, Inc.</i> Pavilion 11	Lifecycle Data Bases for Buildings Curtis C. Pounds <i>McDonnell Douglas Architectural, Engineering & Construction Systems Co.</i> Ballroom F
Hardware	Contemporary Applications of Speech Technology Pavilion 11 Understanding Parallelism and Its Use In Supercomputers Pavilion 5	Image Processing Technology Pavilion 5 Departmental Computing: Panacea or Solution? Pavilion 4	Smart Facilities in Support of Smart Systems Michael Bell <i>Harbinger Group</i> Ballroom G	Will New Architectures Save the Minicomputer Industry? Pavilion 10 Semiconductor Directions in Connectivity Ballroom G
Management	Change Is Routine for Information Systems Kathy Brittain White <i>University of North Carolina</i> Ballroom F	Inventing the Future — Competitive Advantage M. Victor Janulaitis "Positive Support Review" Ballroom F	Who Really Is the Boss?*	
Marketing Communications	Videotex Ronald Solberg <i>Continental Illinois Corp.</i> Ballroom D	Direct Marketing: Targeting Customers Through the Use of Specialized Data Bases Paul Warren <i>Magnatex International Ltd.</i> Ballroom G		
Networking	International Networking William C. Brasuell <i>Tandem Computers, Inc.</i> Pavilion 10	A Management Overview Joseph Clark <i>Joseph Clark and Co.</i> Pavilion 11	Cabling Systems and Micro/Mainframe Communications Pavilion 4 Network Management Pavilion 5	Case Studies Gordon Lew <i>American Airlines</i> Pavilion 11
Software	Do We Have Pacemakers in Software? Cobol? Unix? Ada? Jean E. Sammet <i>IBM</i> Pavilion 4	Fourth-Generation Languages and Application Generators A. Winsor Brown <i>Douglas Aircraft Co.</i> Pavilion 2	Can Software Help Software Development? The Case for Expert Systems Pavilion 10 Positive Experiences with Software Metrics Pavilion 1	Software Development Management: The Challenge Peter Freeman <i>University of California at Irvine</i> Pavilion 4
Trends				Deregulation and Automation — The Financial Industry John E. Parady <i>Consultant</i> Ballroom F

* Featured session

CW chart compiled by Laura Fredrickson

Information provided by the American Federation of Information Processing Societies

NCC Preview

SCHEDULE AT A GLANCE

Wednesday, June 18				
Exhibit Hours 10 a.m. to 6 p.m.				
Program Track	8:30 a.m. to 10 a.m.	10:30 a.m. to Noon	1:30 p.m. to 3 p.m.	3:30 p.m. to 5 p.m.
Artificial Intelligence	Uncertainty in Intelligent Systems* Ronald Yager Machine Intelligence Institute, Iona College Pavilion 2		Programming Languages for Artificial Intelligence Sheldon Borkin IBM, Cambridge Scientific Center Pavilion 5	
Case Studies		Information Center Case Study — Measuring Success Jerome P. Thode Deloitte Haskins & Sells Ballroom E		
Controversy	Can/Should Data Processing Control PC and Information Center Architecture and Usage? Paul Rosenthal Coopers & Lybrand Pavilion 1		Does Our Formal Education System Meet the Needs of Computer Professionals and Their Employers? John Schleich University of Nevada Pavilion 1	Is Transborder Data Control a Privacy or a Political Isolationism Issue? Terry Curtis California State University, Chico Pavilion 1
Cost Analysis	Decision Support Systems — Myth or Reality? Oscar Bilodeau Humphreys and Associates Ballroom G	Are VPs and PCs Compatible? George Rock Teledyne, Inc. Ballroom G		'Bean Counter' or Financial Data Compiler and Interpreter? Dick Goven Rockwell International Corp. Ballroom E
Educational and Societal Issues		Administrative and Instructional Use of Computers in Education Herbert Witt Dept. of Health and Human Services Ballroom D		How Goes the Computer Revolution?* Norman Livergood University of San Francisco Pavilion 2
End-User Computing	Managing the Training Function Charles Hoerner Information Technology Consulting Ballroom E	Optical Disks and Large Document Image Systems Michael Alsup Arthur Andersen & Co. Pavilion 10	Future Trends in End-User Interface Jim Bair Advance Technologies, Hewlett-Packard Co. Ballroom G	End-User Access: Transactions and Information Ballroom D What MIS Managers Don't Understand About the Office Ballroom F
Engineering	Graphics/Workstation Technology Trends Carl Machover Machover Associates Pavilion 11	How Much Computer for the Analytical Job? John Mazzola McDonnell Douglas Information Systems Group Pavilion 11		
Hardware	Emerging Storage Technologies and Architectures — Judging Real Availability for Future Systems James Moore Dataquest, Inc. Pavilion 5	Are You Keeping Pace with the Future?* Paul Dali Regis McKenna, Inc. Pavilion 2	Transaction Processing — Trends and Directions Lawrence Timmins Gartner Group, Inc. Pavilion 10	Planning Hardware Configurations for Maximizing System Performance in an Office Information Systems Environment Robert McDowell Arthur Young Pavilion 11
Management	Finally, Shoes for the Cobbler's Children Richard Carpenter Intech Ballroom F		How Washington Regulates the Information Age Howard L. Funk Technical Resource Program, IBM Ballroom F	
Marketing Communications				
Networking	Conferencing Thomas House University of Southern California Pavilion 10	Electronic Mail Richard Gunther Ontyme Systems, McDonnell Douglas Information Systems Group Pavilion 4	Long-Distance Alternatives Gwynda Myers The JIA Group Pavilion 4	Networking Software Chris Hughes Intel Corp. Pavilion 10
Software	Views and Perspectives of the Future of Data Bases and Graphics Gerald Marrone Citicorp. Pavilion 4	Software Maintenance — Observing the Profession Pavilion 1 Let's Talk About Friendliness, Usability, Windows, Icons, etc. Pavilion 5	Can We Manufacture Software? How? Why? Norihisa Suzuki IBM Pavilion 11	Software Testing: The Bugbusters Grow Up! E. F. Miller Software Research, Inc. Pavilion 4
Trends	Trends in Contract Services Philippe Dreyfus Cap Gemini Society, Paris Ballroom D	Computer Politics and Policies John Gosden The Equitable Ballroom F	An Expert Predicts the Future* Alan Paller AUI Data Graphics/Issco Pavilion 2	

* Featured session

CW chart compiled by Laura Fredrickson

Information provided by the American Federation of Information Processing Societies

Before you jump
to conclusions,



consider our



INTRODUCING THE TOUGHSHELL™.

Now that the 3480 subsystem is the new industry standard, suddenly everybody's in the race to make 3480 media.

So how do you pick a winner?

By looking at one track record: Memorex, maker of the Toughshell™ premium tape cartridge.

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on the track of just one goal: making the best media you can buy. That kind of determination made us the world leader in open-reel tape.

And the leader of the pack in 3480 education. Thousands of key DP and MIS personnel across the country have

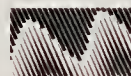
track record.

attended our National Training Seminars. If you'd like to take part in one, just contact your Memorex sales rep.

Speaking of reps, they're living proof that we're in it for the long run. Because while the competition hopped in and out of the media business, we hung in there. And we did it with people—sales reps and oxide chemists, quality control inspectors, and technical service reps who know more about hardware

than a lot of the folks who sell it.

So when you back our champion, the Toughshell, you get all of these people backing you up as well. Call your Memorex rep today. Even if you've just got questions about the megabyte race, we've got the time to talk things over. After all, we're in no hurry.



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NCC Preview

Thursday, June 19			Exhibit Hours 10 a.m. to 4 p.m.	
Time	Research and Development		Small Business	
8:30 a.m.	<div><div>8:30 to 9:15</div><div>Identification, Authentication and Privacy In Digital Communications B.O. Brien RSA Data Security, Inc. Hilton Ballroom</div></div> <div><div>8:30 to 9:15</div><div>Reasoning About Knowledge — An Overview J. Halpern IBM Research Center Hilton Ballroom</div></div>		<div><div>8:30 to 10</div><div>Before the Purchase Process: How to Know You're Ready for Automation Ron Mansfield Mansfield and Associates Hilton Ballroom</div></div>	
9	<div><div>9:15 to 10</div><div>Applying Software Reliability Models to Decision Support C. Chang University of Illinois at Chicago Hilton Ballroom</div></div> <div><div>9:15 to 10</div><div>Updates In Relational Data Bases B. C. Desai Concordia University, Canada Hilton Ballroom</div></div>			
10	<div><div>10 to 10:45</div><div>SPQL: Software Product Quality Level M. Ohba Japan Science Institute, IBM Japan Hilton Ballroom</div></div> <div><div>10 to 10:45</div><div>Non-Chronological Sequential Simulation D. Kumar University of Texas at Austin Hilton Ballroom</div></div>		<div><div>10 to 10:30</div><div>Break</div></div>	
11	<div><div>10:45 to 1:30</div><div>Extending the Capabilities of Word Processing Software H. Berghel University of Nebraska Hilton Ballroom</div></div> <div><div>10:45 to 11:30</div><div>Detecting Loop Structure In Assembly Code L. Cleveland Japan Science Institute, IBM Japan Hilton Ballroom</div></div>		<div><div>10:30 to noon</div><div>During the Purchase Process: How to Streamline Your Computer Purchase Theresa Meyers Quarterdeck Office Systems, Inc. Hilton Ballroom</div></div>	
Noon	<div><div>11:30 to 12:15</div><div>Project Source File Management Under the Unix Operating System A. Filipski Motorola Microcomputers Hilton Ballroom</div></div> <div><div>11:30 to 12:15</div><div>Generation of Minimum Test Sets for Detection and Location of Multiple Faults In Fanout-Free Combinational Circuits H. K. Su North Carolina State University and IBM Research, Triangle Park Hilton Ballroom</div></div>		<div><div>Noon to 1:30</div><div>Break</div></div>	
	<div><div>12:15 to 1</div><div>Break</div></div>			
1 p.m.	<div><div>1 to 1:45</div><div>Graphic-Theoretic Bounds for On-Line Checks In Multiple Processor Systems P. Banerjee Coordinated Science Laboratory of the University of Illinois Hilton Ballroom</div></div> <div><div>1 to 1:45</div><div>Fault Tolerance and Diagnosability of a Class of Binomial Interconnection Networks A. Ghafoor Syracuse University Hilton Ballroom</div></div>		<div><div>1:30 to 3</div><div>After the Purchase Process: How to Make Your Computer Work for Your Business Wayne Wegner Businessland, Inc. Hilton Ballroom</div></div>	
2	<div><div>1:45 to 2:30</div><div>How to Convert Informal Ideas to Formal Ideas In Software Engineering T. Nartker University of Nevada Hilton Ballroom</div></div> <div><div>1:45 to 2:30</div><div>Parallel Probabilistic Computing J. Hershey IBM Hilton Ballroom</div></div>		<div><div>3 to 3:30</div><div>Break</div></div>	
3				
4			<div><div>3:30 to 5</div><div>Current Users of Small Business Computers: Inside Information from First-Time Users Stanley Siegel University of California at Los Angeles Law School Hilton Ballroom</div></div>	
5				

CW chart compiled by Laura Fredrickson
Information provided by the American Federation of Information Processing Societies

NCC Preview

TECHNICAL SESSIONS

WEDNESDAY

(continued from page 71)

"Are VPs and PCs Compatible?"

DAY: Wednesday

TIME: 10:30 a.m. to noon

PLACE: Ballroom G

CHAIR: George Rock, Tele-dyne, Inc.

Speakers will discuss the information manager's role in helping top managers define their data needs.

"Let's Talk about Friendliness, Usability, Windows, Icons, etc."

DAY: Wednesday

TIME: 10:30 a.m. to noon

PLACE: Pavilion 5

CHAIR: William Bracker Jr., Technology Research Associates

Speakers will address various aspects of user interfaces.

"An Expert Predicts the Future"

DAY: Wednesday

TIME: 1:30 p.m. to 3 p.m.

PLACE: Pavilion 2

CHAIR: Alan Paller, AUI Data Graphics/Issco

Paller will provide an overview of computer graphics.

"Does our Formal Education System Meet the Needs of Computer Professionals and Their Employers?"

DAY: Wednesday

TIME: 1:30 p.m. to 3 p.m.

PLACE: Pavilion 1

CHAIR: John Schleich, University of Nevada

Speakers will examine why computer science graduates get treated as trainees.

"Transaction Processing — Trends and Directions"

DAY: Wednesday

TIME: 1:30 p.m. to 3 p.m.

PLACE: Pavilion 10

CHAIR: Lawrence Timmins, Gartner Group, Inc.

Panelists will identify strategic solutions for transaction processing problems.

"Long-Distance Alternatives"

DAY: Wednesday

TIME: 1:30 p.m. to 3 p.m.

PLACE: Pavilion 4

CHAIR: Gwynda Myers, The JIA Group

Representatives from various long-distance carriers will discuss how to choose among carriers.

"Future Trends in End-User Interface"

DAY: Wednesday

TIME: 1:30 p.m. to 3 p.m.

PLACE: Ballroom G

CHAIR: Jim Bair, Hewlett-Packard Co.

Speakers will explore the interface projects that research labs are sponsoring.

"Programming Languages for Artificial Intelligence"

DAY: Wednesday

TIME: 1:30 p.m. to 3 p.m.

PLACE: Pavilion 5

CHAIR: Sheldon Borkin, IBM, Cambridge Scientific Center

Speakers will explain the progress being made in artificial intelligence languages.

Continued on page 82

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SCAN/COBOL takes the effort out of program documentation. Nothing's more important to document than source code, but nothing gets done less.

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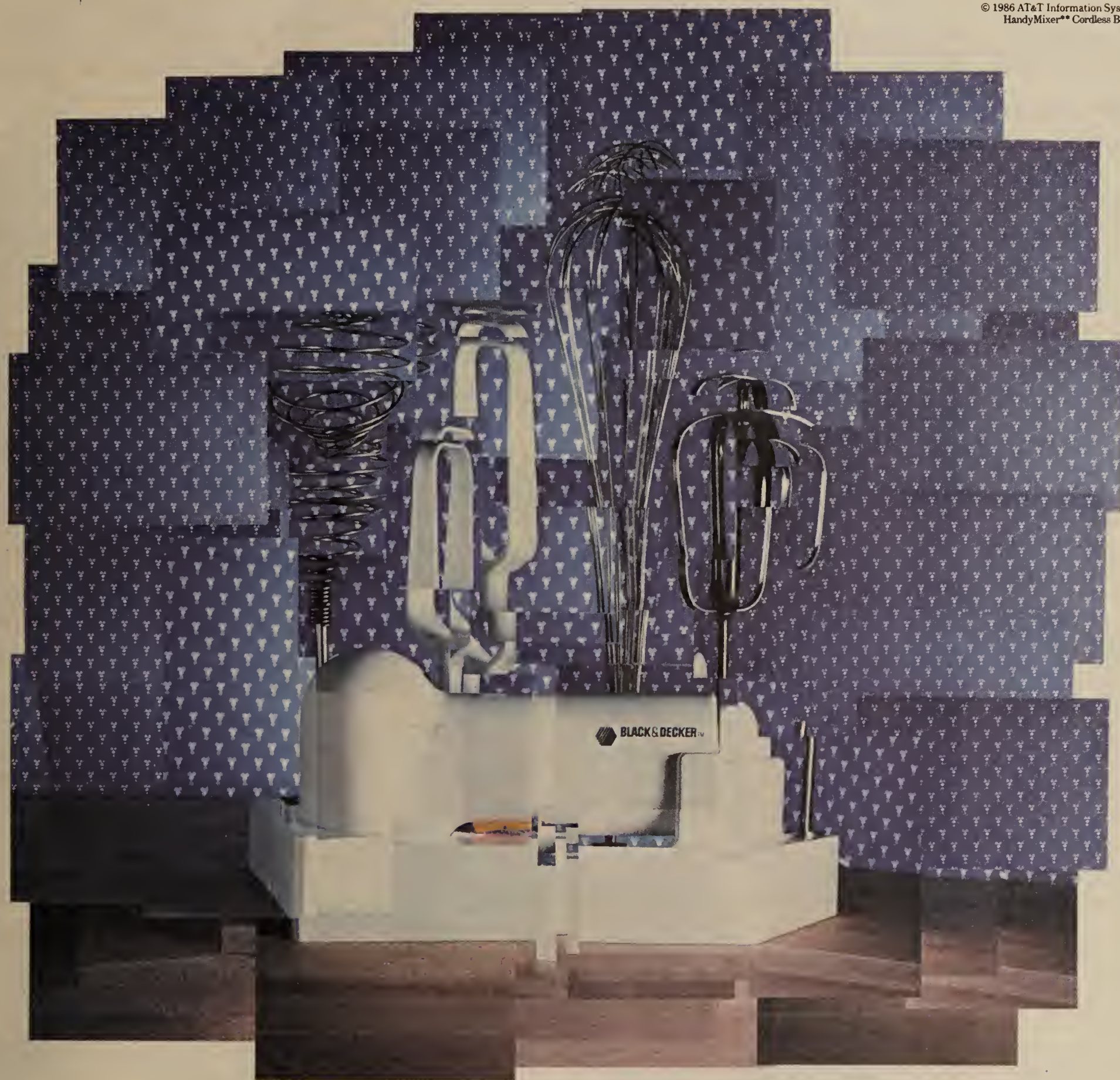
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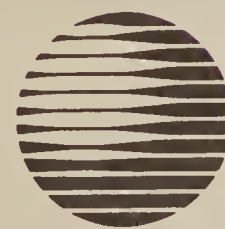
BLACK & DECKER* has always made quality tools that can help you build a kitchen. Now they're making quality tools that can help you cook in one. And AT&T is providing the tools to help them do it faster.

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†Audio Information Exchange

NCC Preview

TECHNICAL SESSIONS

WEDNESDAY

(continued from page 80)

"Can We Manufacture Software? How? Why?"

DAY: Wednesday

TIME: 1:30 p.m. to 3 p.m.

PLACE: Pavilion 11

CHAIR: Norihisa Suzuki, IBM

Speakers will discuss the "software factory" concept, which has been implemented in Japan.

"How Goes the Computer Revolution?"

DAY: Wednesday

TIME: 3:30 p.m. to 5 p.m.

PLACE: Pavilion 2

CHAIR: Norman Livergood, University of San Francisco

Speakers will debate whether we are masters or victims of information.

"End-User Access: Transactions and Information"

DAY: Wednesday

TIME: 3:30 p.m. to 5 p.m.

PLACE: Ballroom D

CHAIR: T. Andrew Finn, AT&T Communications

Panelists will examine videotex, on-line transaction processing and on-line data bases.

"Planning Hardware Configurations for Maximizing System Performance in an Office Information Systems Environment"

DAY: Wednesday

TIME: 3:30 p.m. to 5 p.m.

PLACE: Pavilion 11

CHAIR: Robert McDowell, Arthur Young

Speakers will discuss techniques that improve system performance in environments that support heavy end-user computing.

"Networking Software"

DAY: Wednesday

TIME: 3:30 p.m. to 5 p.m.

PLACE: Pavilion 10

CHAIR: Chris Hughes, Intel Corp.

Speakers will explain the different types of networking software.

"Is Transborder Data Control a Privacy or Political Isolationism Issue?"

DAY: Wednesday

TIME: 3:30 p.m. to 5 p.m.

PLACE: Pavilion 1

CHAIR: Terry Curtis, California State University

Speakers will examine European nations' justification for erecting barriers to transborder data flow.

"Software Testing: The Bugbusters Grow Up!"

DAY: Wednesday

TIME: 3:30 p.m. to 5 p.m.

PLACE: Pavilion 4

CHAIR: E. F. Miller, Software Research, Inc.

Participants will debate whether programmers can predict the general behavior of a program through selective testing in events where exhaustive testing is impossible.

"What MIS Managers Don't Understand About the Office"

DAY: Wednesday

TIME: 3:30 p.m. to 5 p.m.

PLACE: Ballroom F

CHAIR: Linda O'Keefe, Dataquest, Inc.

Speakers will discuss how some good DP management practices can have undesirable effects on office automation.

THURSDAY

Thursday's sessions will be split into two categories: research and development, with 14 half-hour presentations; and small business, with four 1 1/2-hour presentations. See chart page 79 for details.

Think.



Think ahead.



At Spectragraphics, we've always had a company philosophy of not just thinking, but thinking ahead. It's something to strive for. And it does more than just sound nice in our corporate brochure.

It pays off.

For example, last year we introduced the DesignSet 1080,™ a graphics terminal that's compatible with the IBM 5080.

As good as it was at the time, the most important feature of the DS 1080 was its potential. A designed-in poten-

tial for growth with easy field upgrades. So every DS 1080, this year's or last's, can have all the most up-to-date features we have to offer. With complete compatibility and maintainability. Which gives our model a future without planned obsolescence.

Unfortunately, that wasn't an option given to customers of companies who merely think. Customers who are now working with out-of-date models that aren't even a year old.

In addition to the foresight we have in designing products, Spectragraphics

has the track record, stability and service to back them up. Because we know that those things help just as much in making your system run smoothly.

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The best way
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Today.

As computer systems multiply, so do the problems of sharing information among the people who use them.

Each system has its own operating software. Its own way of representing data. And its own way of communicating this data to the outside world. And as systems change to keep up with technological advances, the more users must struggle just to keep up.

But one computer company can bring all your users together. No matter how many vendors you're using.

At Digital, the ability to network computers is the cornerstone of our entire computing strategy. No wonder, then, that a Digital network can communicate with IBM mainframes and personal computers better than IBM can. Your users can exchange memos, mail, and documents directly. With no slowdowns from having to go through an intermediate computer.

And because *we've* planned for change, we can help *you* plan for it, too. You can upgrade to the latest, most cost-effective technology simply by plugging in new equipment. Without bringing down the network you already have. Without disrupting your entire organization.

Perhaps that's why our customers have made our Ethernet networks the most widely installed in the world — with over a half million users. For more than a decade, Digital's networks have been connecting the front office, the factory floor, the engineering center and the MIS department. And today, they're bringing entire companies together on a complete range of VAX™ desktop, departmental and large-scale computers.

Let us show you a Digital network in action at a company near you. Or at one of our 22 Applications Centers for Technology. Just call your local Digital sales office. And we'll show you how one company can bring all your computers together. Today.

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EXHIBITORS' BOOTHS

Adacom Corp.

BOOTH: B-3409, B-3411

REPRESENTATIVES: Moti Gura, president; Mike Holliger, sales manager; Mike Motta, technical services manager.

FEATURED PRODUCTS: Adacom will exhibit its 3270 local distribution network, Adalink transmission devices, Adastation workstation, Shadow printer adapter and Adaprint printer adapter.

AFIPS Press

BOOTH: A-1057

REPRESENTATIVES: Chris Hoelzel, director; Olive Shilland, fulfillment and administration.

FEATURED PRODUCTS: AFIPS Press will exhibit statistical reports, educational materials, proceedings of special seminars and a quarterly journal.

Alloy Computer Products, Inc.

BOOTH: B-3310, B-3312

REPRESENTATIVES: Nigel Spicer, senior vice-president for sales and marketing; Robert Otten, OEM sales manager.

FEATURED PRODUCTS: Alloy will exhibit its APT-120, APT-60 and APT-40 1/4-in. streaming cartridge tape drives and its PC Slave/16 multiuser board.

Alpha Data, Inc.

BOOTH: A-1411

REPRESENTATIVES: Sonny Flink, director of marketing.

FEATURED PRODUCTS: Alpha Data will introduce the Atlas 520, a 520M-byte Winchester-type disk drive, which is said to offer quick access to 2.25M bytes of information.

Amco Engineering Co.

BOOTH: C-4066, C-4068, C-4070

REPRESENTATIVES: Floyd Johnson, sales manager.

FEATURED PRODUCTS: Amco will display a series of vertical, color consoles.

Americable, Inc.

BOOTH: C-3845, C-3874

REPRESENTATIVES: Dave Dent, president; Greg Tripp, vice-president; Paul Christian, Mary Howe and Mark Pearson, sales representatives.

FEATURED PRODUCTS: Americable will exhibit poly-

vinyl chloride and plenum cable assemblies; coaxial and twinaxial cable; RS-232, RS-499 and RS-422 ports; and local-area networks.

Analog & Digital Peripherals, Inc.

BOOTH: C-3457

REPRESENTATIVES: Mary Jane Keeney, sales administrator; Jerry Davis, engineering support manager.

FEATURED PRODUCTS: ADPI will introduce an IBM Personal Computer-compatible, RS-232, 5 1/4-in. floppy disk system, a cartridge storage device and a compact cassette drive.

Anchor Automation, Inc.

BOOTH: C-3444

REPRESENTATIVES: Jerome Hussong, director of consumer sales; George Eisler, president.

FEATURED PRODUCTS: Anchor will exhibit its Volksmodem line of modems and its

IBM ASCII terminals:

The case in black and white.

Introducing a somewhat more colorful member of the family.

Meet the IBM 3164 ASCII Color Display Station.

It gives you eight foreground and eight background colors. On a 14" screen.

And because of its 8 x 16 character matrix, the 3164 gives you clear, crisp characters in color.

But is color any reason to buy IBM's 3164? It is, according to studies that indicate the use of color increases productivity, decreases errors and promotes user satisfaction.

Color, of course, is far from the sole reason for choosing the 3164. To appreciate the others, you should get to know the rest of our ASCII family.

Emulation.**Another side of the family.**

Our ASCII terminals are designed to fit into existing systems. Even if the systems aren't ours.

Emulation Capability	
3161	IBM 3101 Model 881 ADDS Viewpoint* Hazeltine 1500* Lear Siegler ADM-3A* Lear Siegler ADM-5* TeleVideo 910*
3163	IBM 3101 Model 881 DEC VT 52* DEC VT 100* TeleVideo 950*
3164	IBM 3101 Model 881

For example, our basic ASCII Display Station, the IBM 3161, emulates up to six

Features	3161	3163	3164
Screen size	12"	12"	14"
Lines x characters	25x80	25x80	25x80
Character matrix	8x16	8x16	8x16
Double-sized characters	No	Yes	Yes
Line drawing characters	24	24	24
Vertical scroll	Jump	Jump/Smooth	Jump/Smooth
Definable function keys	24	24	24
Windowing	No	Yes	Yes
Partitioning	Horiz.	Vert./Horiz.	Vert./Horiz.
Characters in buffer	1920	7680	7680

programmable function and editing keys so they can be custom-tailored to fit your application needs. The 3163 and 3164 models also have redefinable and recappable keys.

Superior ergonomic design isn't confined to the key-

terminals. And the advanced-function 3163 emulates a number of higher level ASCII data streams.

What's more, every one of our ASCII terminals can operate in its own function-rich native mode.

Our family is flexible.

Our unique plug-in cartridges allow for considerable flexibility in your operation. For example, simply by switching cartridges you can shift a terminal from one data stream to another.

And, in many countries cartridges are also available that go beyond emulation to let you operate your ASCII terminals in several foreign languages. Appropriate foreign language keyboards are also offered.

Enhanced ergonomics. Another family trait.

All our ASCII terminal keyboards have 102 keys. But that's not all they have in common. Every keyboard also has a low profile, gentle contour and typewriter touch.

And our keyboards have

board, however. All three displays tilt and swivel for maximum user satisfaction. And, of course, by making the display easy to read, we made it easier on the eyes. In addition to the 8 x 16 character matrix, we gave it an advanced non-glare etched screen, cursors, and character and field attributes like blink, reverse video, under-scoring and dual intensity.

High standards.**Competitive prices.**

Quantity discounts are offered, too. And financing is available through the IBM Credit Corporation. Best of all, each terminal comes with the quality, service and support you'd expect from IBM.

Contact your IBM marketing representative, or call 1 800 IBM-2468, Ext. KC/90, for the IBM Authorized Distributor nearest you. And we'll present more evidence in the case for IBM's ASCII terminals.

It may be all you need to color your view.

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Listings are based on vendors' responses to a Computerworld questionnaire. Editorial assistant Laura Fredrickson contributed to the reporting and compilation of this material.

NCC Preview

Signalman line of communications products.

Anixter Brothers, Inc.

BOOTH: B-3706

REPRESENTATIVES: William Moeller, Mike Armstrong and Frank Mitchell, product managers.

FEATURED PRODUCTS: Anixter will demonstrate its Cost Efficient Operation ma-

terial management system and its voice and data transmission products and accessories.

Anvil Cases, Inc.

BOOTH: C-4142

REPRESENTATIVES: Sylvia Sepulveda, Rob Menary, Dan Hakala and Jim Patterson, district sales managers.

FEATURED PRODUCTS: Anvil

will display its line of heavy-duty shipping and storage cases and containers for computer hardware, including cases and containers for military applications.

Applied Data Communications, Inc.

BOOTH: C-3352, C-3354

REPRESENTATIVES: Pat Kane, president; Ben Smith, duplication division manag-

er; Bill Williamson, technical division manager.

FEATURED PRODUCTS: Applied Data will feature support products, including duplication systems for 5¼-in. diskettes and a system that burnishes and places diskettes in jackets.

Association for Computing Machinery

BOOTH: A-1312, A-1314,

A-1316

REPRESENTATIVES: Lillian Israel, membership promotion manager; Diana Moore, membership and subscription processing supervisor.

FEATURED PRODUCTS: ACM will feature its journals (including its monthly *Communications of the ACM*), special interest group newsletters and current conference proceedings.

AT&T

BOOTH: A-1034

REPRESENTATIVES: Not available.

FEATURED PRODUCTS: AT&T will exhibit its full line of data processing and communications products, including Unix System V Release 3, Simultask, Starlan and the Unix PC.

BDT Products, Inc.

BOOTH: B-3406

REPRESENTATIVES: Lawrence S. Hebb Jr., president; Penelope Lantry, executive vice-president; Richard Given, vice-president of sales.

FEATURED PRODUCTS: BDT will exhibit its Laserfeeder and Multifeeder sheet feeders for use with laser printers, its Flipper extended-output collator and its line of sheet feeders for dot matrix and daisywheel printers.

**Bell & Howell Co.,
COM Division**

BOOTH: C-3967

REPRESENTATIVES: Gary Moskovitz, president; Richard Banks, marketing manager.

FEATURED PRODUCTS: Bell & Howell will exhibit its COM Print 6000, a compact, inline computer output microfilm print and duplication system.

Bridge Communications, Inc.

BOOTH: C-3824

REPRESENTATIVES: William Carrico, president and chief executive officer; Judith Estrin, executive vice-president.

Continued on page 88

The case in color.



IBM

Announcing
Computerworld's
**MICRO DIRECT
SHOPPER**

SEE PAGE
140

We just
turned Honeywell,
IBM and Wang
into ONE.

Introducing Honeywell's Office Network Exchange.

Good news for companies with millions tied up in computers and communications.

Honeywell has just announced a new capability that will change the way your company looks at computers and communications.

The Office Network Exchange. ONE.

ONE is an information-sharing architecture, a unique combination of hardware and software products that now help to make information stored in your IBM, Wang and Honeywell Systems mutually accessible.

But ONE provides much more than just access. With ONE you not only transfer data, you can manipulate it as needed.

From a single workstation, ONE lets you integrate office processing, data processing, and communications, with decision support tools. Now departments can transfer, share, and combine information from dissimilar data bases. Without extra steps or costly duplications of effort.

ONE just made obsolescence obsolete.

By establishing communications among incompatible systems, the significant investment you've made in mainframes, minicomputers, communications systems—even personal computers—is protected, even enhanced. And future growth is simplified.

ONE helps managers manage more effectively.

Office Network Exchange helps managers manage by providing faster, more efficient access to multiple departmental data bases. With ONE, information can be shared from system to system, department to department. Throughout the company. Around the world.

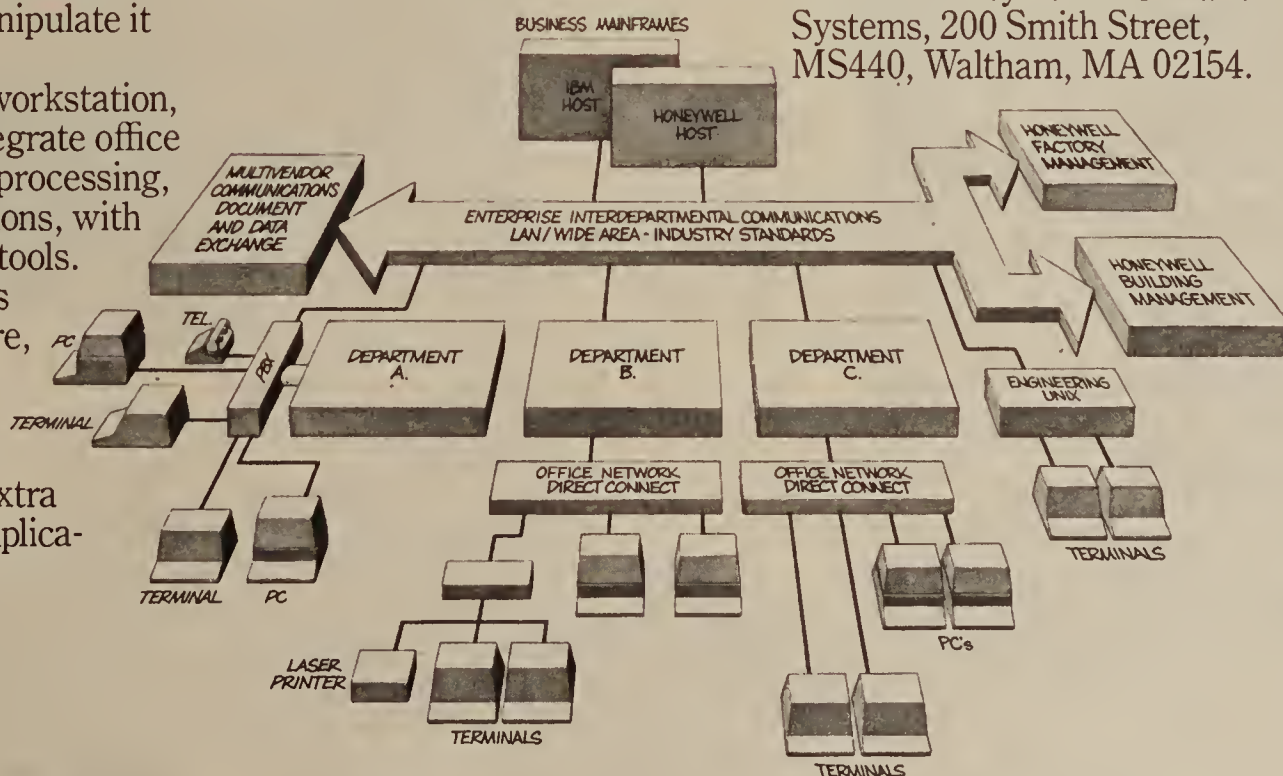
ONE is a major step toward total systems integration.

Right now, Office Network Exchange links a variety of systems from IBM, Wang, and Honeywell. Plus communications systems from AT&T.

Soon it will include other computer vendors such as Digital Equipment Corporation and Hewlett Packard.

So if you have computers from more than one computer company, Honeywell is the company that can help make them work together. And the company that will help integrate your computers, communications and controls into ONE.

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Together, we can find the answers.

Honeywell

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EXHIBITORS' BOOTHS

Continued from page 85

FEATURED PRODUCTS:

Bridge will exhibit its CS/1-3270, a local-area network server; its Lanswitch/1 local-area network data switch; and its GS/300 internetwork gateway.

Britton-Lee, Inc.

BOOTH: B-3332

REPRESENTATIVES: David Britton, president; Peter Story, vice-president of marketing.

FEATURED PRODUCTS: Britton-Lee will announce an enhancement to its RS300 series relational data base

systems.

Bull Peripherals Corp.

BOOTH: C-3508

REPRESENTATIVES: Farid Neema, president; Dean Memdenhall, director of sales.

FEATURED PRODUCTS: Bull

will exhibit its MP6090, a magnetic page printer that prints 90 page/min.

Cambar Business Systems, Inc.

BOOTH: B-3936, B-3938

REPRESENTATIVES: Roger Davis, president; Larry Reg-

ister, western regional manager.

FEATURED PRODUCTS:

Cambar will exhibit its Control customer order processing and inventory management software for wholesale distributors and manufacturers.

Canon U.S.A., Inc.

BOOTH: B-4006

REPRESENTATIVES: M. Tama and M. Yoshikawa, general managers.

FEATURED PRODUCTS:

Canon will introduce the A-200 II series of personal computers and will exhibit laser printers, disk drives and components and a bubble-jet printer.

Capitol Circuits Corp., Printer Products Division

BOOTH: B-3338

REPRESENTATIVES: Josh Zuckert, director of sales and marketing; Brian Starr, applications engineer.

FEATURED PRODUCTS: The Printer Products Division will exhibit its S-600 and S-610 slip printers, its Series 900 printer mechanism and a point-of-sale terminal.

CESN Publications, Inc.

BOOTH: C-3653

REPRESENTATIVES: Brook Taliaferro, editor; Harold H. Short Jr., vice-president of marketing.

FEATURED PRODUCTS:

CESN will exhibit *Computer/Electronics Service News* and *Computer/Electronics Service Guide*.

Charles River Data Systems, Inc.

BOOTH: A-1120

REPRESENTATIVES: Richard Shapiro, president; Joseph D'Angelo, executive vice-president and chief operating officer; Daniel Capone, vice-president of sales and marketing.

FEATURED PRODUCTS:

Charles River Data Systems will introduce a Motorola, Inc. 68020 option for its VME Universe family and a low-end addition to the family and will demonstrate all Universe models.

BREAKTHROUGH: SPEED PATIENT RECOVERY WITH A COMPUTERIZED GET WELL CARD.

When infection threatens, identifying it—and the antibiotic to fight it—takes time. That's time a patient may not have.

We found a way to pinpoint an infection and identify a treatment in just hours instead of days.

Our Vitek diagnostic system uses cards containing "wells" of dehydrated nutrients. When a patient sample is introduced, the infection feeds and grows. Light beamed through the wells to a computer identifies bacteria which are growing. Antibiotics in wells of a second card stop the growth and help the physician choose the best treatment. The time saved is days. The ache saved is appreciated. The lives saved are priceless.

We're creating breakthroughs that make a difference in the way people work and the way people live.

We're McDonnell Douglas.

For more information, write to:
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St. Louis, MO 63178

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for a
speedy
recovery*

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INFORMATION SYSTEMS

HELICOPTERS

FINANCING

ENERGY



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Continued on page 90

Introducing NonStop VLX.™

Tandem technology sets the new standard
for large applications in on-line transaction processing.

More transactions per second
at a lower cost per transaction than any system in the world.

THE CIRCUITRY'S FAST.

We designed the system in our own laboratory, right down to our own unique VLSI chips. The result is more circuitry in less space. With fewer components than our next largest system, the VLX delivers twice the performance and three times the reliability.



PROCESSORS WITH LARGE APPETITES.

The VLX processors move transactions in 32-bit chunks. They reach into main memory in 64-bit chunks. Because this happens in parallel, more work gets done in less time at a lower cost per transaction.

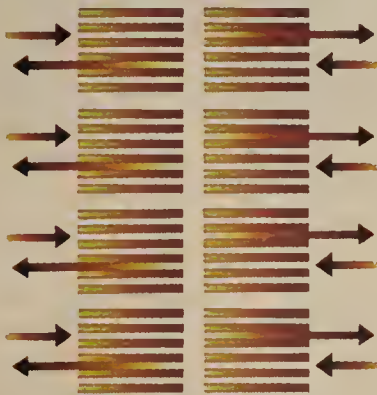
THE SERVICE IS EASY.

All critical components are field replaceable. When service is required, it's faster. You don't even have to stop an operation to add or replace components.



THE DATA EXPRESSWAY.

In a conventional database, I/O requests must be handled sequentially. This creates queues that slow response time. In the VLX system, there are multiple paths to multiple disks. Data enters and leaves the database simultaneously. No time is wasted, and all disk space gets used.

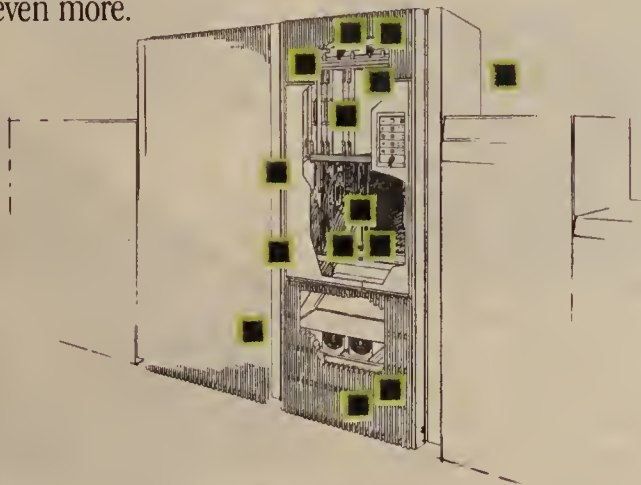


DIAGNOSTICS FROM A DISTANCE.

An integrated microprocessor allows us to monitor the system environment from anywhere in the world. We can even run stress tests remotely. If a failure does occur, the VLX has the capability to automatically dial out to remote centers anywhere in our worldwide network.

THE SYSTEM KNOWS THE SYMPTOMS.

Expert systems software, using fault analysis, directs the problem diagnosis systematically. It also allows us to analyze it and shorten service time even more.

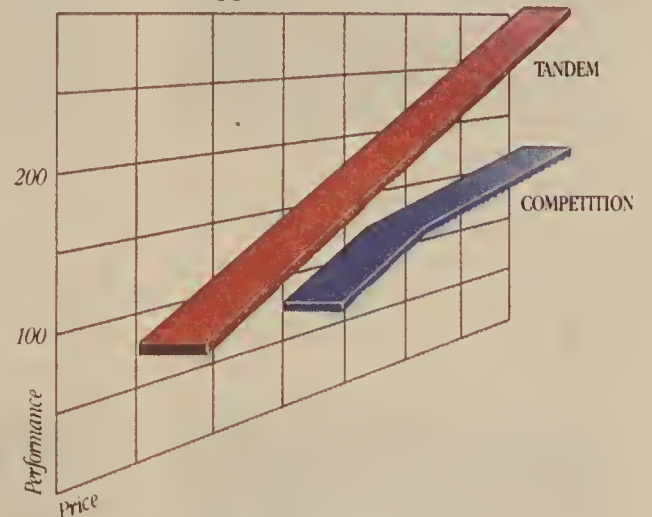


SECRETS ARE SAFE.

We offer software that will protect the security of your data whether it's in the VLX, in another Tandem system or in transmission.

NO GROWING PAINS.

To add power, just add processors. You can grow from a base four-processor system to 16. From there, you can expand in whatever increments you choose, all the way to 255 systems. You never buy more than you need, and you'll never have to rewrite a line of applications code.



NO-FAULT INSURANCE.

Tandem systems achieve fault-tolerance with a unique, parallel processing architecture. There are no idle back-up components. Instead, multiple components share the workload. If one goes down, the others pick up the slack, and application processing is uninterrupted.

HERE TODAY. HERE TOMORROW.

The VLX is compatible with any Tandem system and with all major communications standards—SNA, X.25, MAP and O.S.I. And by acting as a gateway to other vendors' systems, the VLX can link them and enhance their value as well.

WE HAVE EXCELLENT REFERENCES.

Tandem systems are already at work for Fortune 500 companies in banking, telecommunications, manufacturing, transportation, retailing and energy, as well as several branches of the U.S. Government.

To find out what we can do for you, call 800-482-6336 or write to us. Corporate Headquarters: Tandem Computers, Incorporated, 19191 Vallco Parkway, Loc. 4-31, Cupertino, CA 95014

 **TANDEM COMPUTERS**

NCC Preview

EXHIBITORS' BOOTHS

Continued from page 88

Cincom Systems, Inc.**BOOTH:** C-3848**REPRESENTATIVES:** Dick Kleinberg, regional sales manager for Western U.S., Mike Reagan, trade show director.**FEATURED PRODUCTS:** Cincom will exhibit its Supra relational data base management system for IBM mainframes, its Ultra Interactive Data Base System for Digital Equipment Corp. VAX machines and its Mantis fourth-generation development system. The firm will also show its manufacturing, financial, network manage-

ment and micro-mainframe link software.

Computer Science Press, Inc.**BOOTH:** A-1114**REPRESENTATIVES:** Elizabeth Mergner, assistant to the president and acquisitions editor.**FEATURED PRODUCTS:** Computer Science Press will exhibit a variety of books, including *Local-Area and Multiple-Access Networks*.**Computer Technology Group****BOOTH:** C-4133, C-4135**REPRESENTATIVES:** John DeAno, president; Robert Hinchey, executive vice-president.**FEATURED PRODUCTS:** Computer Technology will feature its instructor-led and video training courses.**Cullinet Software, Inc.****BOOTH:** B-3926**REPRESENTATIVES:** Vic Morris, senior international vice-president; Su-

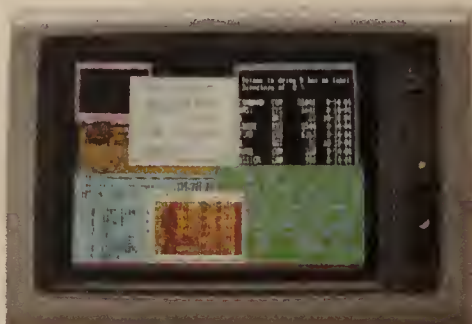
san Zellmann-Rohrer, director of marketing.

FEATURED PRODUCTS: Cullinet will exhibit its IDMS/R relational data base management system and its manufacturing, financial, human resources, banking and information center software. The firm will also feature its Goldengate and Infogate microcomputer packages.**CW Communications, Inc.****BOOTH:** A-1456**REPRESENTATIVES:** Don Fagan, *Computerworld* publisher; Frank Cuttitta, managing director of international marketing services.**FEATURED PRODUCTS:** CWCI will exhibit four of its publications: *Computerworld*, *Computerworld Focus*, *Micro Marketworld* and *Network World*. The firm will also feature its international marketing services.**Cyber Digital, Inc.****BOOTH:** C-3753, C-3755**REPRESENTATIVES:** Jerry Iris, director of office automation sales.**FEATURED PRODUCTS:** Cyber Digital will display its MSX networking switch and a line of products that offer data communications and integrated, simultaneous voice/data communications via standard phone cable.**Data Access Corp.****BOOTH:** C-3344**REPRESENTATIVES:** Charles Casanave, vice-president of marketing; Cory Casanave, vice-president of product development.**FEATURED PRODUCTS:** Data Access will announce a version of its Dataflex application development product for Digital Equipment Corp. VAX MVS environments.**Data Clean Corp.****BOOTH:** C-3410**REPRESENTATIVES:** Phil Bertino, executive vice-president, Western region.**FEATURED PRODUCTS:** Data Clean will feature its computer room cleaning, site preparation and disaster recovery services and products.**Data Exchange Corp.****BOOTH:** C-4227**REPRESENTATIVES:** Sheldon Malchicoff, president; John Rafter, executive vice-president; Dave Van DeMoortel, vice-president of sales and marketing.**FEATURED PRODUCTS:** Data Exchange will feature its system refurbishment services and its repair services for printed-circuit boards and electromechanical subassemblies.

Now playing on the Forte Network:



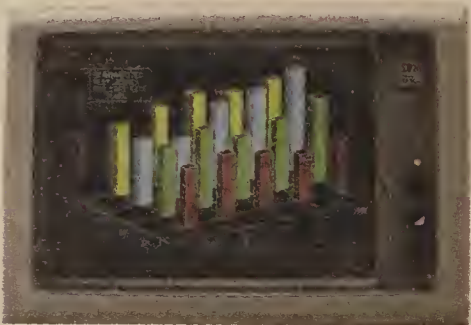
Forte PJ™ The soft-loaded 3278/79 emulator for PCs. A powerful core product with IBM® compatible file transfer support. You can add mainframe graphics, 3270PC and more features as you need them.



Forte 3270PC™ A smarter desk on a disk. The power of IBM's 3270 PC with a simple software upgrade of the Forte PJ. You can "hot key" between host and mainframe windows, and do up to four concurrent file transfers.



ForteNet™ CMS-TSO host software with menu-driven transfers of binary and text files in either direction. Considered one of the industry's fastest software packages.



ForteGraph™ The first link to put IBM mainframe graphics on the PC. Add it to Forte PJ. Supports GDDM®, SAS/GRAPH® and TELLAGRAF™ and IBM's host file transfer support.



ForteGraph (for IRMA)™ The graphics power of ForteGraph for IRMA™ users. Plus compatibility with ForteNet host file transfer software.



ForteLink SNA™ A remote 3274 controller in your PC. Handles up to five concurrent sessions. Like PJ, it supports TopView™ and ForteNet file transfers.



ForteCall TTY™ 3278/79 emulation for remote ASCII terminals. Just dial into your PC to reach the mainframe via PJ. **FortePrint™** Software for PJ that turns your PC printer into a 3287.



A major graphics series, rated APA. 3270PC enhancements. Twinax. LAN Gateways. All part of the Forte network. All attuned to IBM's office systems strategy. For full information, call toll-free. 2205 Fortune Drive, San Jose, CA 95131 (408) 945-9111 Telex 3717447 TOLL-FREE HOTLINE (800) 233-3278



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THE FORCE IN MICRO TO MAINFRAME

Continued on page 92



*"If we're going to
plug a hard disk into
everyone's PC, we
should max out the
RAM, too."*



*Turn your PCs into serious machines.
With FileCard.™ It gives you a 10MB
hard disk and an on-board option of
up to 512K extra system RAM. Low,
low power means you don't have to
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EXHIBITORS' BOOTHS

Continued from page 90

**Data Processing
Management Association**

BOOTH: A-1324, A-1326

REPRESENTATIVES: Janet L. Milakis, director of membership.

FEATURED PRODUCTS: The DPMA will exhibit membership promotion material and educational program information. It will also display its publications.

Datapro Research Corp.

BOOTH: A-1244

REPRESENTATIVES: Richard Burke, vice-president for sales; Bobbi Alpert, regional manager

FEATURED PRODUCTS: Datapro will offer attendees a free research report, "User Ratings of Local-Area Networks," and will exhibit its "Datapro Reports on Communications."

Digi-Data Corp.

BOOTH: C-3746, C-3748

REPRESENTATIVES: Jim Benfer, assistant to the president; Dave Holland, managing director.

FEATURED PRODUCTS: Digi-Data will exhibit its Series 2000 1/2-in. streaming tape drives.

Digital Products, Inc.

BOOTH: A-1535

REPRESENTATIVES: Cornelius Peterson, president; Rich Kasinski, national sales manager.

FEATURED PRODUCTS: Digital Products will exhibit its Netcommander sub-local-area networks and its Print-director printer sharing devices.

Distributed Logic Corp.

BOOTH: A-1847

REPRESENTATIVES: Dennis Edwards, vice-president for sales; Bill Waler, Western regional sales manager; George Kopach, Eastern regional sales manager.

FEATURED PRODUCTS: Dilog will display Digital Equipment Corp.-compatible disk, tape and communications controllers.

**Distributed Processing
Technology**

BOOTH: B-4027, B-4028

REPRESENTATIVES: Steve Goldman, president; Steve Holler, director of marketing

FEATURED PRODUCTS: Distributed Processing will exhibit its PM3010 series caching disk controllers.

Dotronix, Inc.

BOOTH: C-3456

REPRESENTATIVES: Bill Sadler, pres-

ident; Steve Sims, national accounts manager.

FEATURED PRODUCTS: Dotronix will exhibit 3-in. to 23-in. CRT displays, a liquid crystal shutter display, multi-mode and multifrequency monitors and high-resolution monitors.

Dranetz Technologies, Inc.

BOOTH: A-1104, A-1105

REPRESENTATIVES: David Fuhrman, vice-president and general manager for computer products.

FEATURED PRODUCTS: Dranetz will

introduce the Dran-Scan I multipoint power line monitoring system, which combines an IBM Personal Computer, a Dranetz Series 710 data communications multiplexer, up to 64 power line disturbance remote monitor units and a software package.

Eastman Kodak Co.

BOOTH: C-3936

REPRESENTATIVES: Michael Maxwell, manager of computer-assisted retrieval products; James McKay, manager of computer imaging products.

FEATURED PRODUCTS: Kodak will exhibit products from its business imaging systems division, its copy products division, its mass memory division and its subsidiary, Verbatim Corp. Featured will be Kodak's recently announced PC KAR-1500, a computer-assisted retrieval system.

Edpac Corp.

BOOTH: A-1116, A-1214, A-1215, A-1216

REPRESENTATIVES: George Brown, president and chief executive officer; John Ambrose, chairman.

INTELLIGEN

It takes more than a PC to
make a 3270 network work.Telex understands the individual needs of managing information. That's why we've introduced the Intelligent System Series.TM

The new Telex 1260/1280 Intelligent Workstations have been developed especially for 3270 users. Powerful, highly configurable workstations that adapt to your organization's personal needs. From high-end microcomputer performance to on-line host interaction, the Intelligent System Series is designed for flexibility, engineered for power.

The Telex 1260 is the low cost choice for users seeking IBM XT compatibility and AT performance. Telex's 1280 runs up to 30% faster than the AT and supports both AT hardware and software. Together the 1260/1280 offer a wide selection of memory, storage, peripheral and expansion options to provide for today's needs as well as tomorrow's growth. And they both support a choice of 3278 or AT style keyboards.

Telex is "the" single source for 3270 intelligence, performance and flexibility. From terminals and workstations to software and peripherals, Telex provides complete customer support. And we back every product with over 2000 Telex dedicated service and support people worldwide.

For more information, contact our Marketing Communications Department, 6422 East 41st Street, Tulsa, OK 74135. 1-800-331-2623 (In Oklahoma call 918-628-3113).

Telex 1260/1280
Intelligent WorkstationsIBM AT and IBM XT are trademarks of International Business Machines.
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FEATURED PRODUCTS: Edpac will exhibit its Tech 80 and Minitech 90 computer room air-conditioning systems.

Elsevier Science Publishing Co.

BOOTH: A-1658, A-1659

REPRESENTATIVES: Alan Corneretto, acquisitions editor; Ken Adams, marketing coordinator.

FEATURED PRODUCTS: Elsevier will exhibit *Cuadra/Elsevier: Directory of Online Databases*, *The Software Catalog* and other computer science books and journals.

Emergency Power Engineering, Inc.

BOOTH: C-3648

REPRESENTATIVES: Brad Little, director of marketing.

FEATURED PRODUCTS: Emergency Power will exhibit its entire line of electrical products.

Emulex Corp.

BOOTH: C-3770

REPRESENTATIVES: Bob Coupland, marketing and communications manager.

FEATURED PRODUCTS: Emulex will exhibit its IP7000 disk controller for Digital Equipment Corp. VAX users, its MD series of disk controllers and other storage products, including the UC14 host adapter and the ATS Kit, which provides the IBM Personal

Computer AT with disk storage.

Epson America, Inc.

BOOTH: A-1144

REPRESENTATIVES: Peter Bergman and Dennis Cox, group product managers.

FEATURED PRODUCTS: Epson will exhibit a series of personal computers, portable computers, dot matrix printers and ink-jet printers. The firm will also show one plotter, the HI-80.

Equitable Life Leasing Corp.

BOOTH: B-3413

REPRESENTATIVES: Bill Taylor and

Nelson Strickland, executive vice-presidents.

FEATURED PRODUCTS: Equitable will feature its operating leases and national vendor programs.

Exide Electronics

BOOTH: B-3331

REPRESENTATIVES: Connie Gentry, manager of marketing communications.

FEATURED PRODUCTS: Exide will introduce its Series 6000 line of uninterruptible power supplies.

Fenwal, Inc.

BOOTH: C-3801, C-3803, C-3805

REPRESENTATIVES: Marv Charney, regional manager; Bill MacDonald, sales engineer.

FEATURED PRODUCTS: Fenwal will introduce Vesda, a safety device that is designed to detect smoke and burning synthetic materials before conventional smoke detectors can. The detector is an air sampling-type detector with three sensitivity levels.

Fike Fire Suppression Systems

BOOTH: C-4120, C-4122

REPRESENTATIVES: Bill Eckholm, division manager; Bob Gibbs, national sales manager.

FEATURED PRODUCTS: Fike will exhibit a line of fire suppression equipment.

Flexible Computer Corp.

BOOTH: B-3612

REPRESENTATIVES: Nicholas Matellan, president and chief executive officer.

FEATURED PRODUCTS: Flexible will exhibit its Series 3000 Flex/32 Multi-computer, a parallel computer with 40 computer modules. It will also show its Series 1200 Flex/32 Multi-computer, which will be linked to the Series 3000 via Ethernet, and its C2C, a real-time computer module based on Motorola, Inc.'s 68020.

Fujitsu America, Inc.

BOOTH: C-3630

REPRESENTATIVES: Mitsuo Tada, executive vice-president; Donald Moffet, president.

FEATURED PRODUCTS: Fujitsu will exhibit printers, disk drives, computer systems and office automation equipment, including modems and facsimile machines.

Continued on next page

CE AT WORK

HOST

TELEX 274
IBM 3274



The #1
3270 Alternative

TELEX

TELEX COMPUTER PRODUCTS, INC.

Announcing
Computerworld's
**MICRO DIRECT
SHOPPER**

SEE PAGE
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NCC Preview

EXHIBITORS' BOOTHS

Continued from previous page

Gemidex, SDS

BOOTH: B-3937

REPRESENTATIVES: W. B. Hoffman, president; Michael Jenkins, programming technician; Dianne Skidmore, technical support.

FEATURED PRODUCTS: Gemidex will exhibit its Gemidex PC data entry software with file transfer, which allows up to 35,000 keystroke/hour.

General Robotics Corp.

BOOTH: B-3326

REPRESENTATIVES: Carl Pick, chairman; Barbara Pick, executive vice-president.

FEATURED PRODUCTS: General Robotics will exhibit the Python/32B, a 32-bit supermicro that offers up to 16M bytes of memory and supports up to 64 users.

Gimix, Inc.

BOOTH: B-4235, B-4236

REPRESENTATIVES: Robert Phillips, president; Richard Don, vice-president.

FEATURED PRODUCTS: Gimix will ex-

hibit Motorola, Inc. 68020-based, single-board computers and 68020 development systems.

Graham Magnetix, Inc.

BOOTH: A-1660, A-1661

REPRESENTATIVES: Herb Schantz, vice-president of marketing; Art Field, vice-president of sales; Ray Waver, product manager.

FEATURED PRODUCTS: Graham will exhibit the Epoch MTC tape cartridge, the Media Management Program Controller, the Inspector IV MDC tape evaluator, Ultimac and Epoch 480

magnetic tape.

Grid Systems Corp.

BOOTH: C-3636

REPRESENTATIVES: Sam Wiegand, president and chief executive officer; Alan Lefkof, vice-president of marketing; Bruce Walter, sales vice-president.

FEATURED PRODUCTS: Grid will exhibit its Gridcase line of laptops and its software products. The firm will also announce price reductions.

GTE Spacenet Corp.

BOOTH: C-3973

REPRESENTATIVES: Ivan Riley, vice-president of marketing; Michael Cafarel, director of industrial accounts marketing; Anthony Romano, director of field marketing.

FEATURED PRODUCTS: GTE Spacenet will introduce three satellite-based Skystar network data services: Skystar Multipoint, Skystar Point-to-Point and Skystar Interactive Network.

Hattori Corporation of America, Hattori Seiko Computer Peripherals Division

BOOTH: B-3325

REPRESENTATIVES: Marshall Shaw, general manager and national sales manager.

FEATURED PRODUCTS: Hattori Seiko will exhibit the MP-1300AI impact dot matrix printer, which features a speed of 300 char./sec.

Hitachi Ltd.

BOOTH: C-4012

REPRESENTATIVES: Kenzo Isomopo, senior advertising specialist.

FEATURED PRODUCTS: Hitachi will exhibit computer peripherals, disk drives, tape drives and an optical disk drive. It will also show color display, bubble memory and compact disk read-only memory products.

Honeywell, Inc.'s Information Systems division

BOOTH: C-3930

REPRESENTATIVES: Bill Wray, executive vice-president of information Systems; Gene Manno, group vice-president; Dave Cleary, vice-president and general manager.

FEATURED PRODUCTS: Honeywell will introduce the DPS 6 Plus family of minicomputers and the Office Network Exchange information-sharing architecture.

Honeywell, Inc. Micro Switch division

BOOTH: C-3462

REPRESENTATIVES: Mark Tiddeens, marketing director for keyboards;

MADE FOR EACH OTHER.

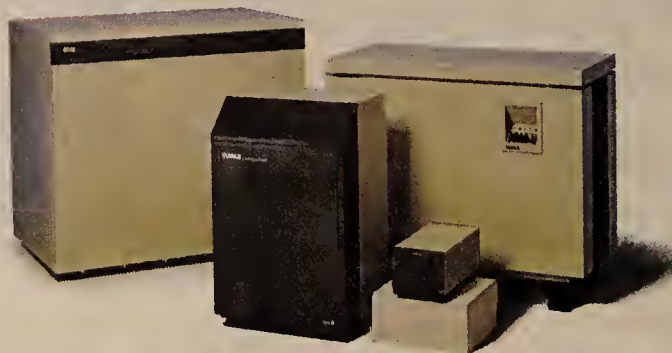


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Duwayne Pople, product manager for keyboards.

FEATURED PRODUCTS: Micro Switch will exhibit IBM Personal Computer-compatible keyboards, Digital Equipment Corp.-compatible keyboards and solid-state sensors.

IBM

BOOTH: B-3738, B-3306

REPRESENTATIVES: Not available.

FEATURED PRODUCTS: IBM's exhibit will focus on nine broad topics: computer-integrated manufacturing; personal computers; departmental systems; advanced technology; telecommunications; printers; large systems; IBM alternate channels; and text, image and graphics.

IMSL, Inc.

BOOTH: B-3815, B-3817

REPRESENTATIVES: Chuck Johnson, chairman of the board; Bill Potratz, manager of promotions; Pete Palmer, sales manager.

FEATURED PRODUCTS: IMSL will exhibit its IMSL/Library, Sfun/Library, Math/PC-Library and Stat/PC-Library. It will also show a series of Protran problem-solving environments.

Information Processing, Inc.

BOOTH: A-1002

REPRESENTATIVES: Diane Weinzierl, account manager; Don Tyra, president.

FEATURED PRODUCTS: Information Processing will exhibit PC-Blis, a multiuser operating system and Cobol compiler for the IBM Personal Computer XT and AT and compatibles. The firm will also display Blis/Cobol, a multiuser operating system and Cobol compiler.

Informer Computer Terminals, Inc.

BOOTH: B-4206

REPRESENTATIVES: Lars Persson, president; Thomas Sadowski, vice-president of marketing and sales; Peter Weill, vice-president of international operations.

FEATURED PRODUCTS: Informer will introduce the Model 208, a portable color workstation; the Model 211, a module for micro-mainframe connection; the Model 281, a protocol converter; and the System 300, a twin-axial controller coupled with a portable workstation to emulate the IBM 5251.

Infotron Systems Corp.

BOOTH: A-1220

REPRESENTATIVES: Jim Hahn, president and chief executive officer; Bob Bauer, vice-president of marketing and development; Steve Stuart, vice-president of sales.

FEATURED PRODUCTS: Infotron will exhibit the Integrated Network Manager, which is designed to provide single-point control of both T1 backbone networks and Infotron's 990 access network.

Institute of Electrical and Electronics Engineers, Inc.

BOOTH: C-3246, C-3248, C-3250, C-3252

REPRESENTATIVES: Cathy Ferrere, marketing manager; Joan Izzo and Louise Esposito, marketing assistants.

FEATURED PRODUCTS: The IEEE will exhibit transactions from its 33 member societies and publications from the IEEE Press. It will also feature membership service information and an on-line data base system.

Interlink Computer Sciences, Inc.

BOOTH: C-3407

REPRESENTATIVES: Susan Chillemi, marketing communications manager; James Pementel, press secretary; Stephen Bowden, Western regional sales manager.

FEATURED PRODUCTS: Interlink will exhibit the VM/Decnet gateway, the MVS/Decnet gateway and the 3711S gateway, a series of products that feature bidirectional file transfer, data translation and terminal emulation.

International Data Corp.

BOOTH: C-3952, C-3954, C-3956, C-3958

REPRESENTATIVES: Joseph Levy, senior vice-president; Peter Rowell,

president; Nina Ricci, director of marketing.

FEATURED PRODUCTS: IDC's booth will feature its market analysis and consulting services for the information processing industry.

International Planning Information, Inc.

BOOTH: B-3417

REPRESENTATIVES: Murray Disman, president; Daniel Sik, vice-president.

FEATURED PRODUCTS: International Planning will exhibit market research and planning reports.

Continued on next page

LOCAL DATA — MAP TO — IBM CONNECTIVITY

It's Easy to Solve IBM Connectivity Problems With Local Data Protocol Converters

EASY IBM HOST ACCESS

Get immediate host access from an async PC, CRT or printer with DataLynx/3274 or 5251. Use it instead of a cluster controller for economical, secure local and remote connectivity.

A Fresno (CA) hospital uses DataLynx to bring nine DEC VT-100 terminals on line with a BSC host 200 miles away at Blue Cross offices in Los Angeles.

The hospital transfers confidential patient and medicare data to Blue Cross using inexpensive async modems. Administrative productivity is increased through better patient account control and cash flow problems are solved with faster insurance compensation payments.

InterLynx/3287 attaches virtually any low cost ASCII printer anyplace you can plug in a 3287, allowing a major department store to access their IBM 4381 with a Texas Instruments 850. This provides an efficient and inexpensive method of printing bridal registry service announcements. The credit department also uses the TI850 for efficient printing of records and reports.



Convert your 3270 coax devices to RS-232 today. Then place your coax terminals anywhere your PABX, data switch or LAN wiring goes. Mix or match Async and Coax terminals in the network. Sound great? It is.

3270 COAX RECYCLING CENTER

TruLynx PC software provides fast easy file transfer to IBM host programs through DataLynx Protocol Converters. In one major application company executives update financial planning databases from PC's at home and in the office. In another application source code for large mainframe application programs is transferred to and from PC's for demonstration, test and editing.

SPEEDY PC FILE TRANSFER**ROUTE 3X**

Local Data offers two excellent System 34, 36, 38 connectivity products. DataLynx/5251 provides exceptional dialup async access with X.25 and ETU file transfer support.

InterLynx/5251 connects to the host at the twinax port, eliminating the costly communications adapter.

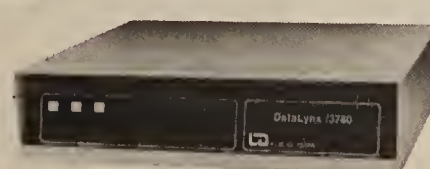
Users access the host by way of asynchronous modems or local RS-232C connections.

InterLynx/5251 moves data at 38.4Kb and supports print rates to 5200 cps. DataLynx/5251 recognizes up to 32 LUs, dual sync hosts and supports data at 19.2Kb and 9600 baud.

Customers of a restaurant supply house in Denver dial an IBM/36 host through a DataLynx/5251, check inventory levels, current pricing and perform their own order entry.

This is especially helpful to ski area concession operators who prepare large quantity orders during off hours, cutting delivery time to their mountain locations.

The supplier gives better service, maintains improved inventory and passes savings on to his customers. The customer has better inventory control, schedules deliveries to suit his needs, and maintains easy communications with his supplier.

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EXHIBITORS' BOOTHS

Continued from previous page

Jensen Tools, Inc.

BOOTH: A-1061

REPRESENTATIVES: Tom Fenzel, sales manager.

FEATURED PRODUCTS: Jensen will exhibit telecommunications, maintenance and repair kits.

Juki Office Machine Corp.

BOOTH: B-3317

REPRESENTATIVES: T. Hagiwara, printer division vice-president; Sal Sastito, national sales manager;

FEATURED PRODUCTS: Juki will exhibit daisywheel and dot matrix printers.

Kimtron Corp.

BOOTH: A-1750

REPRESENTATIVES: John Kim, president; Charles Kaplan, Eastern regional sales manager.

FEATURED PRODUCTS: Kimtron will show four data terminals, a local-area network and three workstations.

Leading Edge**Products, Inc.**

BOOTH: B-3620

REPRESENTATIVES: Not available.

FEATURED PRODUCTS: Leading Edge will exhibit a standard and fixed-disk version of its Model D personal computer and a selection of software.

**Lear Siegler, Inc.,
Data Products division**

BOOTH: C-3538

REPRESENTATIVES: Richard Knoblock, president; Jim Weeks, marketing product specialist.

FEATURED PRODUCTS: Lear Siegler will introduce alphanumeric and color graphics VDTs.

Lee Data Corp.

BOOTH: C-4016, C-4018

REPRESENTATIVES: Not available

FEATURED PRODUCTS: Lee Data will exhibit network and local processing products for IBM 3270 and Personal Computer environments.

Litton Computer Services

BOOTH: C-3550

REPRESENTATIVES: Les Fondiler, vice-president and general manager; Robert Huston, vice-president.

FEATURED PRODUCTS: Litton will feature the Litton Data Network, the Litton Image Design Center and a range of remote computing services.

**M/A-Com Cable Home
Communications**

BOOTH: C-3401, C-3403

REPRESENTATIVES: Joe Teague, vice-president for sales and marketing; Nita Hunsucker, customer service manager.

FEATURED PRODUCTS: M/A-Com will exhibit electronic wire and cable for computers, local-area networks and data communications.

**McGraw-Hill Information
Systems Co.**

BOOTH: B-3418

REPRESENTATIVES: Gary Beach, advertising sales manager; George Werner, publisher.

FEATURED PRODUCTS: McGraw-Hill will exhibit its *Data Communications* magazine, buyers' guide and buyers' cards.**Megadata Corp./TSD
Display Products**

BOOTH: A-1121

REPRESENTATIVES: Ari Bachana, president; Dick Adams, Steve Sloan, director of sales for TSD.

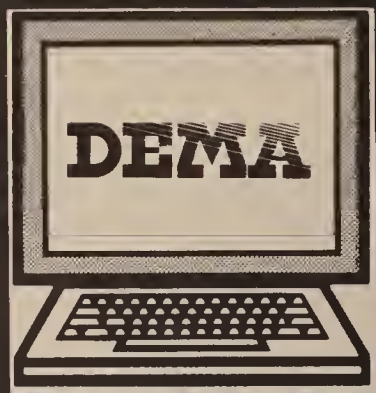
FEATURED PRODUCTS: Megadata will exhibit its Models 7, 6 and 4 Unix processors, its 8188 family of intelligent terminals, a series of touch-screen digitizers and an intelligent multiplexer.

**Memorex Media Products
Group, Industrial Products Division**

BOOTH: A-1153

REPRESENTATIVES: Mark Klein, vice-president of sales and marketing; Tom Roberts, national sales manager.

FEATURED PRODUCTS: Memorex will exhibit the Memorex 34809 Tough-shell Cartridge and accessories.

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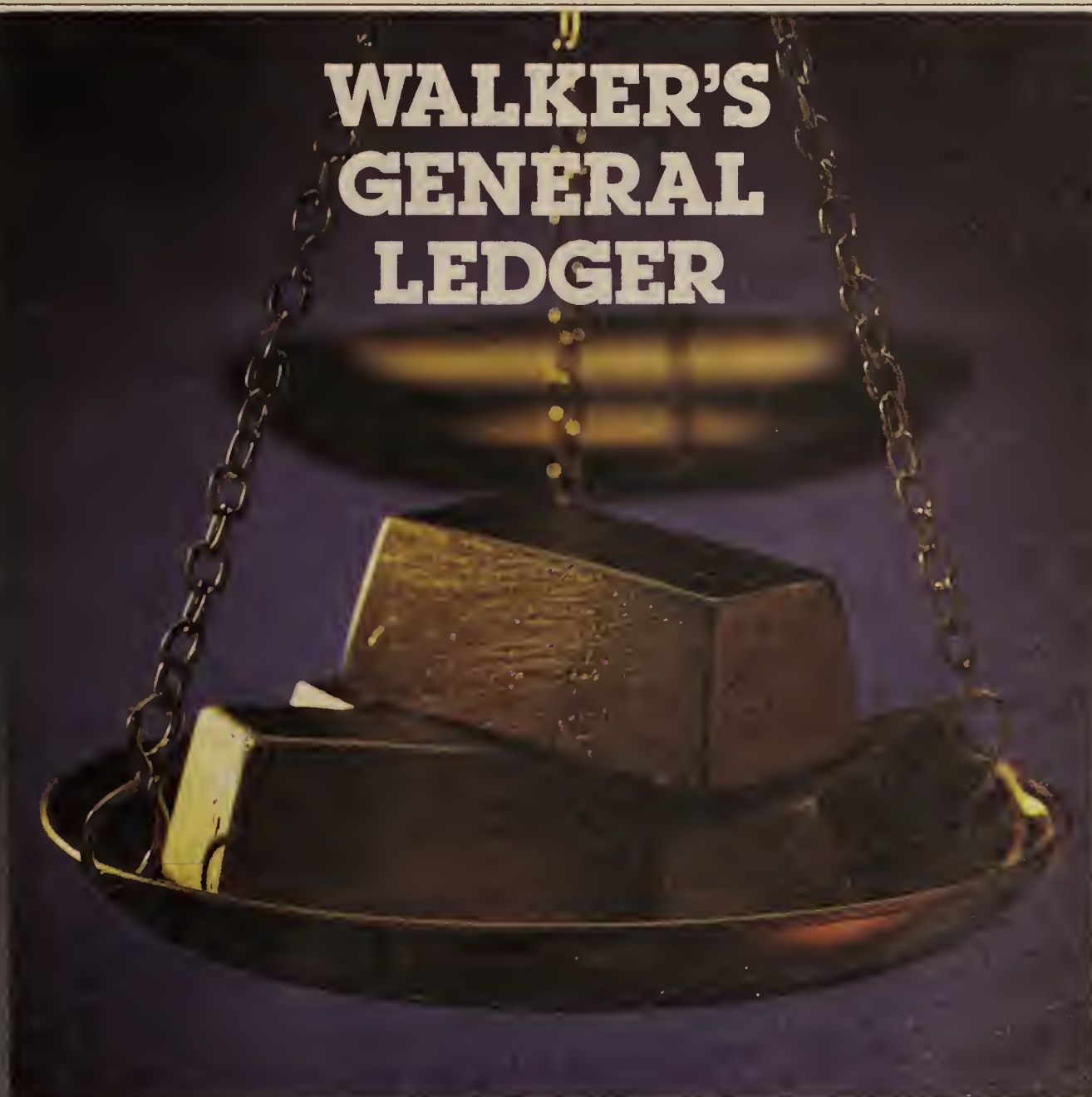
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Microlytics, Inc.**BOOTH:** A-1207**REPRESENTATIVES:** Michael Weiner, president.**FEATURED PRODUCTS:** Microlytics will demonstrate its Word Finder electronic thesaurus software and Type Right, a real-time spelling checker.**Micron Industries Corp.****BOOTH:** C-4131**REPRESENTATIVES:** Frank Bussa, product manager; Donald Wehrenberg, vice-president of marketing.**FEATURED PRODUCTS:** Micron will exhibit its power conditioners.**Micro Technology, Inc.****BOOTH:** A-1112, A-1113**REPRESENTATIVES:** Dan Sullivan, vice-president for marketing and sales; Richard Hicksted, president.**FEATURED PRODUCTS:** Micro Technology will display Q-bus-compatible disk, floppy and tape controllers for Digital Equipment Corp. machines.**The MIT Press****BOOTH:** C-3314**REPRESENTATIVES:** Frank Satlow, executive editor; Cathy Maretz, sales representative.**FEATURED PRODUCTS:** The MIT Press will display professional, technical and trade books and journals.**Modern Office Technology****BOOTH:** A-1213**REPRESENTATIVES:** Daryl James, West Coast district manager; Lura K. Romei, editor.**FEATURED PRODUCTS:** Copies of various issues of *Modern Office Technology* magazine will be available.**Modular Power Corp.****BOOTH:** B-3316, B-3318**REPRESENTATIVES:** John Waterman, president; David Hoffman, vice-president of development; Tony Matouk, vice-president of manufacturing.**FEATURED PRODUCTS:** Modular Power will introduce Upstar, an uninterruptible power system.**Motorola Semiconductor Products, Inc.****BOOTH:** A-1256**REPRESENTATIVES:** Craig Skeppstrom, Al Mouton and Rich Potyka, marketing managers.**FEATURED PRODUCTS:** Motorola Semiconductor will exhibit its telecommunications and linear products and its display and terminal systems.**Multi-Tech Systems, Inc.****BOOTH:** B-3337**REPRESENTATIVES:** Thomas Heimerman, marketing director; Pete Hanlon

and Jan Hubbard, managers for national accounts.

FEATURED PRODUCTS: Multi-Tech Systems will display its line of modems and its Multimux statistical multiplexers.**National Semiconductor Corp.****BOOTH:** A-1534**REPRESENTATIVES:** Jim Lucas, marketing communications manager.**FEATURED PRODUCTS:** National Semi will exhibit its Series 32000 32-bit microprocessor family and associated software and will introduce Unix System V, Release 3.0 software.**NEC Information Systems, Inc.****BOOTH:** B-3916**REPRESENTATIVES:** Frank Girard, vice-president of systems sales and marketing.**FEATURED PRODUCTS:** NEC will introduce a Unix-based minicomputer that supports up to 32 workstations and will also demonstrate its Pinwriter dot matrix printers and Spinwriter letter-quality printers.**Nestar Systems, Inc.****BOOTH:** A-1008**REPRESENTATIVES:** Charles Hart, president; Harry Saal, vice-president of research and development.**FEATURED PRODUCTS:** Nestar will exhibit its Plan local-area network line, which includes the Plan 2000 file and print server; the Plan 5000 file server and the Plan 3000B net.**Network Systems Corp.****BOOTH:** A-1652**REPRESENTATIVES:** Robert Burns, vice-president of planning; Mahlon Moore, vice-president of marketing.**FEATURED PRODUCTS:** Network Systems will exhibit its Hyperchannel A and Hyperchannel B local-area network products and its Hyperbus terminal network.

Continued on next page



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EXHIBITORS' BOOTHS

Continued from previous page

Nichimen America, Inc.

BOOTH: C-3376

REPRESENTATIVES: K. Obata, manager of electronics.

FEATURED PRODUCTS: Nichimen America will exhibit its switching power supplies and a cross-flow fan.

Nixdorf Computer Corp.

BOOTH: A-1234

REPRESENTATIVES: Michael Anderson, president; James Addlesberger, vice-president of sales and marketing.

FEATURED PRODUCTS: Nixdorf will introduce two general business systems: the 8870 Model 75 and 8870 Model 25. It will also announce a micro color terminal: the 8810/35.

Nortronics Co.

BOOTH: A-1006

REPRESENTATIVES: Mike Drees, director of engineering; Tom Pozinski, product sales manager.

FEATURED PRODUCTS: Nortronics will exhibit magnetic tape heads and magnetic card heads.

Office Automation Systems, Inc.

BOOTH: C-4060

REPRESENTATIVES: Jan Kirk, president; Robert Freeman, cofounder; John Whalen, senior vice-president of sales.

FEATURED PRODUCTS: Office Automation will display its Laserpro line of laser printers and a forms generation package, among other products.

Optotech, Inc.

BOOTH: C-3972

REPRESENTATIVES: Phil Shires, president; Nelson Yew, chairman of the board; Di Chen, executive vice-president and chief technical officer;

FEATURED PRODUCTS: Optotech will exhibit its Model 5984 optical disk drive and its line of controller cards for the IBM Personal Computer, Personal Computer XT, AT and compatibles.

Oracle Corp.

BOOTH: C-3915

REPRESENTATIVES: Gary Gibson, corporate vice-president; Tom Siebel, director of strategic accounts.

FEATURED PRODUCTS: Oracle will announce Version V of its Oracle relational data base management system and productivity tools.

Panasonic Industrial Co.,
Computer Products Division

BOOTH: B-3538

REPRESENTATIVES: Frank Yaman-

aka, general manager; Dick Walker, assistant general manager.

FEATURED PRODUCTS: Panasonic's Computer Products Division will exhibit its full product line, including its Business Partner personal computers, monitors and printers.

Para Systems, Inc.

BOOTH: A-1434

REPRESENTATIVES: Jim Keffer, president; Bruce Brown and Les Robertson, sales managers.

FEATURED PRODUCTS: Para will exhibit its Minuteman uninterruptible

power supplies for minicomputers and micros.

Peed Publishing, Inc.

BOOTH: A-1820

REPRESENTATIVES: Kimberly Mitchell-Kriz, sales representative.

FEATURED PRODUCTS: Peed will exhibit *The Processor*, a publication for dealers, brokers and end users.Philips Peripherals, Inc.

BOOTH: C-3616

REPRESENTATIVES: Theo Loevenich, general manager.

FEATURED PRODUCTS: Philips Peripherals will exhibit the GP 480L, a dot matrix printer.

Philips Subsystems
& Peripherals, Inc.

BOOTH: C-3616

REPRESENTATIVES: Robert Moes, director of marketing; Robert Van Eijk, marketing manager.

FEATURED PRODUCTS: Philips Subsystems & Peripherals will demon-

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strate compact disk read-only memory devices.

Pictel Corp.

BOOTH: A-1421

REPRESENTATIVES: Brian Hinman, cofounder and technical vice-president; Randall Smith, vice-president of marketing and sales.

FEATURED PRODUCTS:

Pictel will demonstrate the Pictel videophone system, which operates over dial-up lines and lets callers talk face-to-face.

Plesman Publications

BOOTH: C-3554

REPRESENTATIVES: Gord Campbell, editor; Jim Rostron and James Markis, sales representatives.

FEATURED PRODUCTS: Plesman will exhibit *Computing Canada*, a publication for the data processing industry.

Printronic, Inc.

BOOTH: A-1054

REPRESENTATIVES: Jack Andersen, senior vice-president for domestic marketing; Joe Marolda, vice-president for OEM sales; Ken Mathews, vice-president for district sales.

FEATURED PRODUCTS: Printronix will introduce laser printers and matrix line printers. It will also show its line

of band printers.

QMS, Inc.

BOOTH: C-3870

REPRESENTATIVES: Tom Tanko and Kim Marshall, product managers; Paul Reeves, national dealer sales manager.

FEATURED PRODUCTS: QMS will exhibit its Kiss, Smartwriter, PS, Lasergrafix, Concept and Laser Connection series of laser printers.

Quadratronics Systems, Inc.

BOOTH: C-3904

REPRESENTATIVES: Karl Klessig, chairman; John Theiss, president.

FEATURED PRODUCTS: Quadratronics will display versions of its Q-Office + software in French, German, Spanish and Italian. The firm will also display a bit-mapped version of its Q-One word processing software.

Relational Technology, Inc.

BOOTH: B-3950

REPRESENTATIVES: Peter Tierney, vice-president of marketing.

FEATURED PRODUCTS: Relational Technology will exhibit its Ingres relational data base management system, Ingres/PC Link micro-mainframe connection and Vigraph visual graphics editor.

Research, Inc., Teleray Division

BOOTH: A-1655, A-1656, A-1657

REPRESENTATIVES: Ed Abramson, president of Research, Inc.; Tuck Renshaw, Teleray Division vice-president; John Beland, engineering manager; Steve Schaefer, sales manager.

FEATURED PRODUCTS: Teleray will exhibit a line of ANSI-standard, multi-protocol terminals that communicate, in menu-selectable operating modes, with two or more host computers.

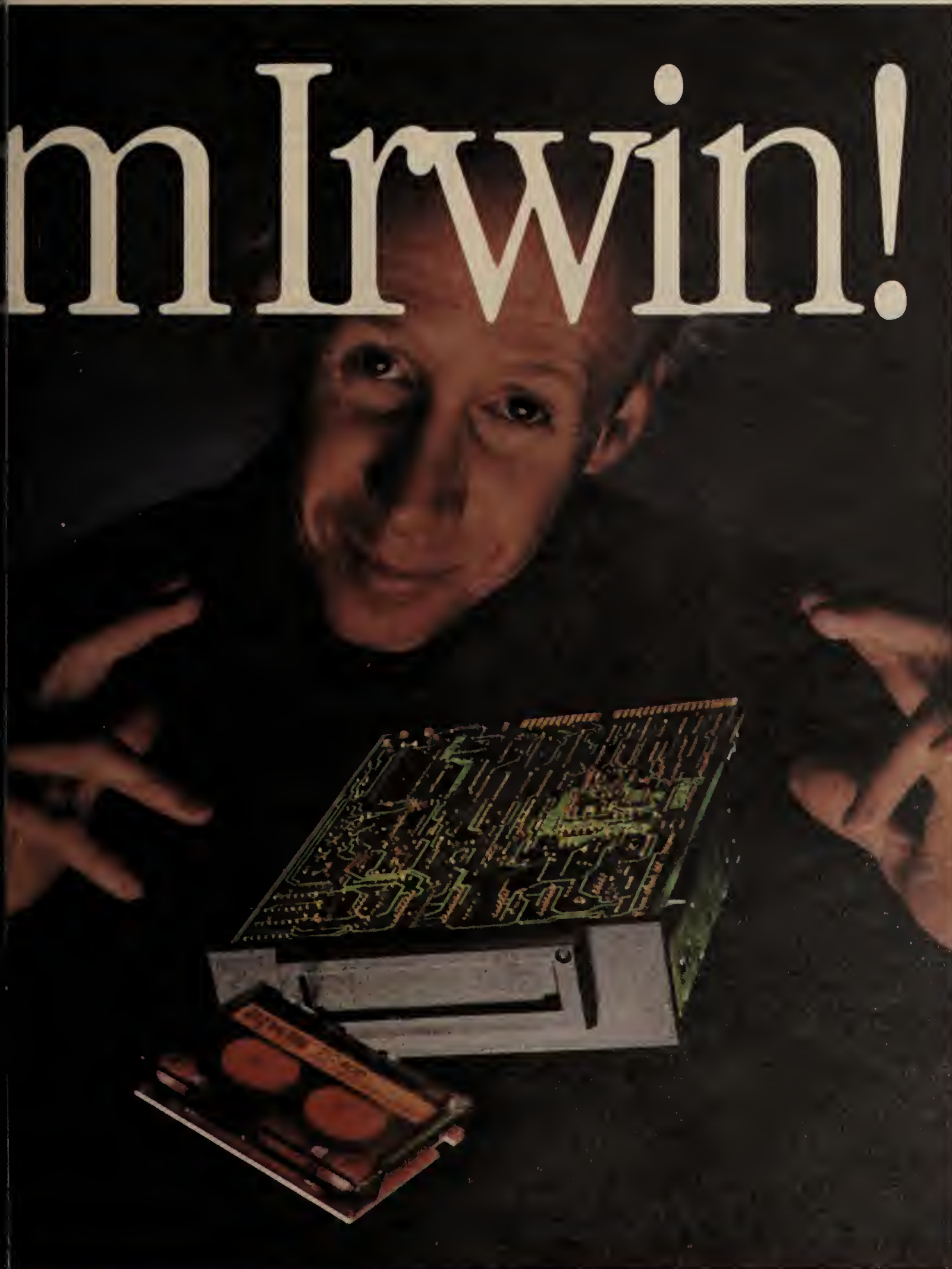
Ricoh Corp.

BOOTH: B-4238

REPRESENTATIVES: Yukihiro Wada, president of Ricoh Systems, Inc.; Peter Mork, vice-president of Ricoh Corp..

FEATURED PRODUCTS: Ricoh will exhibit the LP4080R, a table-top, 8 page/min laser printer, and the RP3400Q, a compact serial impact printer.

Continued on next page



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EXHIBITORS' BOOTHS

Continued from previous page

SAB Nife, Inc.

BOOTH: C-3559, C-3561

REPRESENTATIVES: Alan Feo, national sales manager for Nifepower; Mike Groh, vice-president of Nife Powertronics; Des Faria, technical director.

FEATURED PRODUCTS: SAB Nife will exhibit its Nifepower 800 uninterruptible power supply and other power products.

Sampo Corporation of America

BOOTH: C-3659, C-3661, C-3663

REPRESENTATIVES: Jung Ko, executive vice-president; George Korzeniowski, vice-president.

FEATURED PRODUCTS: Sampo will display a variety of display monitors, CRT terminals, liquid crystal shutter display monitors and thermal transfer printers.

Science Applications International Corp.

BOOTH: B-4036

REPRESENTATIVES: Randy Dockter, nuclear instrumentation division com-

puter systems manager

FEATURED PRODUCTS: Science Applications will exhibit Dapper, a command-driven data manipulation analysis and plotting program for the IBM Personal Computer and compatibles.

Second Source Computers, Inc.

BOOTH: C-4054

REPRESENTATIVES: Frank Jacobson, president; Dean Gaston, director of customer service

FEATURED PRODUCTS: SSCI will exhibit its SSCI-800 minicomputer and

will announce the SSCI-3200, which supports up to 16M bytes of error-checking and correcting memory.

Seikosha Co., U.S.A. Office

BOOTH: B-3325

REPRESENTATIVES: Tad Terao, general manager; Phillip Strong, manager of national OEM sales coordination.

FEATURED PRODUCTS: Seikosha will exhibit the MP-1300, a dot matrix printer that features a snap-in color printing kit.

The Society for Computer Simulation

BOOTH: A-1334

REPRESENTATIVES: Charles Pratt, executive director.

FEATURED PRODUCTS: The society will exhibit recently published books on artificial intelligence.

Society for Information Display

BOOTH: A-1724

REPRESENTATIVES: Larry Tannas, treasurer; Bettye Burdett, national office manager.

FEATURED PRODUCTS: SID will exhibit copies of technical papers and digests.

Solidstate Controls, Inc.

BOOTH: C-3306

REPRESENTATIVES: Richard F. Cassidy, president; Norman O'Leary, Darwin Delans and Richard Holden, sales managers.

FEATURED PRODUCTS: Solidstate will exhibit its Powerbase 1000, Powerbase 4000, Powerbase 5000, Silencer and Powerguard products.

Sorbus, Inc.

BOOTH: C-4236

REPRESENTATIVES: John Valentino, senior vice-president for development and support

FEATURED PRODUCTS: Sorbus will feature its computer maintenance services for IBM mainframes, MAI/Basic Four Information Systems, Inc. minicomputers and IBM Personal Computers.

Sord Computer of America, Inc.

BOOTH: B-4038, B-4039

REPRESENTATIVES: Takayoshi Shiina, president; Hitoshi Kubota, marketing vice-president.

FEATURED PRODUCTS: Sord will exhibit the M680UX, a VME System V machine; the M68MX, a Motorola, Inc. 68000-based desktop unit; and the IS-11C, a laptop portable with Digital Equipment Corp. VT100 emulation.

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EXHIBITORS' BOOTHS

Continued from previous page

Venturcom, Inc.

BOOTH: C-3830

REPRESENTATIVES: Myron Zimmerman, president; James Graham, vice-president and director of marketing; Meryl Charnow, director of sales.

FEATURED PRODUCTS: Venturcom will exhibit its Prelude information management system. The firm will also feature its Venix System V Version 2 operating system.

Videx, Inc.

BOOTH: C-3447, C-3449

REPRESENTATIVES: Paul Davis, president; Jack Trowbridge, research and development manager; Jim Dawson, software development manager.

FEATURED PRODUCTS: Videx will exhibit Timewand, a credit card-size, programmable bar code reader; Smart Recharger, a programmable communications device for translating protocols; and Mailcenter, communications software for Apple Computer, Inc.'s Appletalk network.

Visual Technology, Inc.

BOOTH: A-1107

REPRESENTATIVES: Clifford Zimmer, president; John Bruni, vice-president of marketing; Frank Wesolowski, vice-president of sales.

FEATURED PRODUCTS: Visual Technology will exhibit the Visual 220, 230, 240, 241 and 1000, a series of video display terminals.

Votan Co.

BOOTH: C-4218

REPRESENTATIVES: James Rogaus, president; Robert Russo, vice-president of sales and marketing; Jim Cook, director of product marketing.

FEATURED PRODUCTS: Votan will announce the Votan voice mail system.

The firm will also exhibit the Votan Voice Card, an IBM Personal Computer plug-in card; the VTR 6060, an RS-232 voice terminal; and the VTR 3270, a 3270 voice terminal.

Xepix, Inc.

BOOTH: C-3637

REPRESENTATIVES: Edward Neylan, president; Ernie Rioux, vice-president of marketing and sales; Ray Ahern, national accounts manager.

FEATURED PRODUCTS: Xepix will introduce the Gator S and the Gator L, two 32-bit Motorola, Inc. 68020-based supermicros that support high-resolution, bit-mapped graphics. It will also show other members of its Gator line.

Xylogics, Inc.

BOOTH: C-3837, C-3839

REPRESENTATIVES: Bruce Bergman, president; Kindra Alaimo, manager of sales and marketing support; Kevin Gonor, vice-president of sales.

FEATURED PRODUCTS: Xylogics will feature its recently announced Xylogics 712, a disk controller for VME-bus-based systems.

Zenith Data Systems Corp.

BOOTH: B-3510

REPRESENTATIVES: Bob Dilworth, president; John Frank, vice-president of marketing; Art Lambert, vice-president of sales.

FEATURED PRODUCTS: Zenith will exhibit its Z-171 laptop, its Z-200 and Z-158 desktop machines and its Z-148 personal computers. The firm will also show a variety of monitors and its Xenix operating system.

Zetaco, Inc.

BOOTH: C-3544

REPRESENTATIVES: Bob McGowan and Bob Lafferty, sales representatives; Gary Becker, technical representative.

FEATURED PRODUCTS: Zetaco will exhibit a series of Data General Corp.-compatible interfaces and subsystems, including the LRS-10 optical disk subsystem, the ARZ-1 disk controller, the DPS-1 dual-processor switch and the STA-1 tape interface adaptor.

Zoltech Corp.

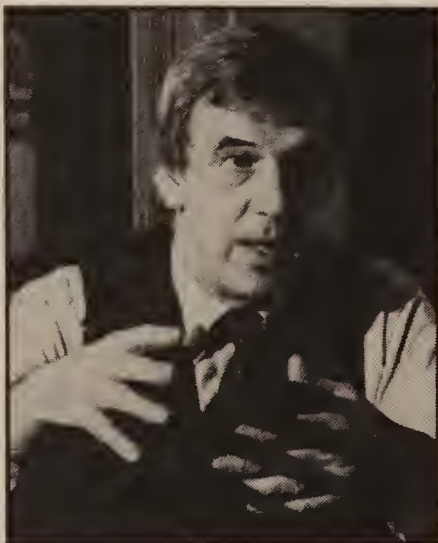
BOOTH: C-3767, C-3769

REPRESENTATIVES: Les LaZar, president; Dave Friedman and Betty Kayton, vice-presidents; Michele Blair, sales manager.

FEATURED PRODUCTS: Zoltech will exhibit a line of VME and Q-bus systems, including the VV-11 series and the VQ-11 chassis.

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MANAGEMENT



TAKING CHARGE

Alan Brill

Preparing for the DP audit

Mention the words "it's annual audit time" to most data processing managers, and you'll see an immediate, often full-blown anxiety attack. They have been traumatized by the last five annual audits they've gone through and are sure the next 10 will be equally painful.

You hear managers talking at conferences, consoling each other. "Yes," one tells the other, "our auditors gave us a horrible, vengeful, negative report. Never would have suspected that they had such an axe to grind. Came clear out of the blue. First I heard of it was when the boss got a copy of the report that went to the board!"

You've heard the same things. Maybe said them. And it's an absolute shame. Auditing does not have to be a painful process or a useless one. And there shouldn't be any surprises.

Almost every DP shop is audited by one or more organizations. The company's own internal auditors frequently review data processing work — so do independent accounting firms. Audits conducted by government agencies are also a fact of life, particularly for the public sector DP manager or the manager in a highly regulated industry. In fact, many DP organizations have internal review or quality assurance functions built into them.

So as DP managers, we're audited in one way or another all the time. It is my contention that the way the DP portions of the audits are conducted causes the problems.

See **PREPARING** page 104

Brill is director of Computer Security Services for the New York City Department of Investigation.

Offshore data entry pays off

Satellite communications speed turnaround time

By David A. Ludlum

American Airlines expected the productivity of workers at a data entry facility to fall 30% when it moved the operation from Oklahoma to Barbados last year to take advantage of lower wages. Instead, productivity improved, and American has set up a subsidiary, Caribbean Data Services, Inc., through which it now sells the facility's services to other companies.

American's experience helps illustrate the recent rapid growth in offshore data entry operations. While the shops were first set up in the 1960s, their number has mushroomed in recent years with the availability of sophisticated satellite communications, which speed up the turnaround time.

"The office doesn't have to be next door any more," says Norman Bodek, president of the Data Entry Management Associa-

tion, who estimates that, after a spurt of growth last year, there are about 75 offshore data entry shops. About a third are owned by American companies, he says.

While many in the industry expect optical scanners to eventually take over data entry work, some organizations have recently abandoned scanners, and Bodek does not expect them to be in wide use for 15 years.

Until then, offshore entry could grow rapidly and have a significant effect on clerical employment in the U.S., according to a report by the U.S. Congress' Office of Technology Assessment (OTA).

American-owned offshore facilities have been set up by both internal corporate data processing departments and independent service bureaus. The Caribbean is the most popular location — there are at least 20 facilities in Barbados and Jamaica — but shops have also been established in Ireland, Singapore and the People's Republic of China, among other locations.

The shops work with a variety of data, See **OFFSHORE** page 112

INSIDE

Managers on the Move: New chief at Security Pacific Automation/**105**

Calendar: conferences, shows, seminars/**106**

INSTANT ANALYSIS

"I'm at peace. I think it's important for a person to know when it's time to come and time to go."

— Frank Borman announcing his resignation as chairman and chief executive of Eastern Airlines

Nonverbal communication: DP management taken at face value

By Jeffry Beeler

Many data processing supervisors moving into higher management jobs lack skills for handling fellow workers, among these being a knack for nonverbal communication, according to several industry sources.

"Many DP managers come from a technical background where a lot of their tasks are often relatively cut and dried," says Richard Goldenberg, chief of MIS at Martin Marietta Corp. in Long Beach, Calif. "So when they finally get into management, they frequently haven't had a chance to develop skills at handling people and in some ways are unprepared for their new jobs."

A somewhat tougher stance is taken by Loretta Malandro, founder of Malandro Communication, Inc., a Tempe, Ariz.-based consulting firm. As a career development

counselor for executives in Fortune 500 corporations, Malandro has dealt extensively with information systems.

While there are exceptions, she says, "by and large, the people who run computer organizations inside large companies are unresponsive, expressionless, static and extremely self-controlled. As a result, other people find them hard to read and are often uncomfortable in their presence."

At a recent NCR Corp. users group meeting, Malandro cited fresh clinical studies that suggest the power of nonverbal communication to reveal a speaker's thought and to influence a listener. Contrary to popular opinion, words convey only a paltry 7% of the total information that two typical people exchange during everyday discourse, she said.

See **MANAGEMENT** page 113

Bonuses, other staff incentives require careful handling

Dinners, faster response times among options

By Donna Raimondi

In any MIS organization, there are employees who put in a day's work, and there are employees who excel. Rewarding the programmer or analyst who does his utmost for the company can be a tricky piece of politics. If handled without finesse, a reward system can lead to damaged egos in the MIS shop, MIS managers say.

"There is a danger in giving incentives for special accomplishments," says Darrell Waite, vice-president of information services at Ramada Inns, Inc. in Phoenix. Waite's managers give family dinner vouchers to em-

ployees who perform special accomplishments, and the company has experimented with other rewards.

Some of the programs have worked, but "some people who don't get a chance to be in on it feel bad," Waite says.

Some workers may never be in a position to win performance awards unless there is some kind of hero-making crisis that they solve, says a vice-president of a Bell operating company, who asked not to be named. For example, software maintenance people who work very hard, solving tough problems all the time are not as visible as program developers who create new solutions. Such workers might feel left out and could become resentful, so it is important to pay them very well for the work

they do, he says.

If the regional Bell company reaches its performance objectives for a given year, it puts aside a pool of incentive money, the vice-president says. Significant team awards — from 5% to 10% of each team member's salary — are given out for especially good work. "We hold back 20% of this pool for special individual merit awards that can be given for outstanding performance on a particular project or for sustained outstanding performance," he says. Smaller rewards take the form of weekend trips and football or baseball tickets.

The Bell vice-president is one who does not think rewards have to damage the egos of nonrecipients. In fact, Bell makes the major awards in pub-

lic, formal presentations. "Awards can provide something to shoot for. Some people like to receive their awards privately, but we don't do that. We want them public." Bell's MIS turnover rate is 3%, which is about half the industry average, he says.

At Alpo Petfoods, Inc. of Allentown, Pa., outstanding performance is rewarded with promotions and career advancements, says Terry L. Heeter, director of MIS. There is no corporate policy on rewards, and Alpo has never considered any kind of incentive plan. But the company tries to address needs of its programmers and analysts in other ways, he says. "The most important incentive to keep good people is a good work

See **BONUSES** page 104

MANAGEMENT

Preparing for the DP audit

From page 103

I spent more than seven years with a Big Eight accounting firm and conducted a lot of the data processing portions of the annual audits of major corporations. And I undoubtedly caused a lot of problems for my clients and for myself through ineffective or inefficient DP/auditor relationships.

Now as a DP manager with that background, I've been on both sides of the fence. Here are some frequently heard questions about the audit process as well as ways you can prepare, eliminate surprises and work more effectively with the audit team.

Our company's fiscal year ends Dec. 31. What are the auditors doing here in the summer?

While that's the year-end date, the audit is a very long and complex process. Some of the first questions that auditors ask are, "How good are the company's internal controls? Can we rely on the computerized records for our work, or will we have to work around the computer?"

To find out, the DP area is one of the first stops that auditors make. If there are problems found, the auditors will likely increase the amount of testing of the company's records for accuracy. (Such testing can be time-consuming and expensive. Good internal accounting controls in your systems pay themselves back very quickly).

The DP phase of the audit should be at about the same time each year, so you should be able to plan for it. Get the schedule early in the year from your internal audit manager or whomever is liaison to the auditors in your organization.

Why the endless interviews? Can't we get a list of the information that the auditors need and just provide it to them?

You can. In most cases, if you schedule an early meeting with the audit team manager, he will probably provide you with a set of questionnaires to be used to document your general DP environment, organization and internal controls and to provide information on your major applications.

Fill them out and forward them to the auditors. They will then schedule a visit to verify, ask questions and review one or more applications in detail. This process helps you by assuring you that the answers are correct and complete and by reducing the number of expensive auditor-hours spent on semiclerical tasks.

The auditors seem to keep barging in on everyone. How can I maintain some degree of control?

The audit process is an interactive one, but it need not disrupt your operations. Again, the secret to success is an opening meeting in which you and the audit team agree on ground rules. To the extent that they know (from your completed questionnaires) who they want to see, you can schedule meetings at mutually convenient times.

When they need to see others, it is not unreasonable to ask that they coordinate scheduling through you

or someone you designate. But don't use the agreement to try to slow down or sidetrack the auditors. They have the right, given by the board of directors, to see whatever and whomever they have to.

Who is in charge of the audit? Who do I complain to if there's a problem?

For internal audits, see your firm's internal audit director. For external audits, I would still start with the internal audit manager. But the person you eventually have to meet is the outside firm executive in charge of the audit, generally a manager, principal or partner in the firm. That's the person with the power to handle disputes. When you experience a problem with an audit staff member, you help yourself and your company by bringing it to management's attention quickly.

Bonuses, other staff incentives

From page 103

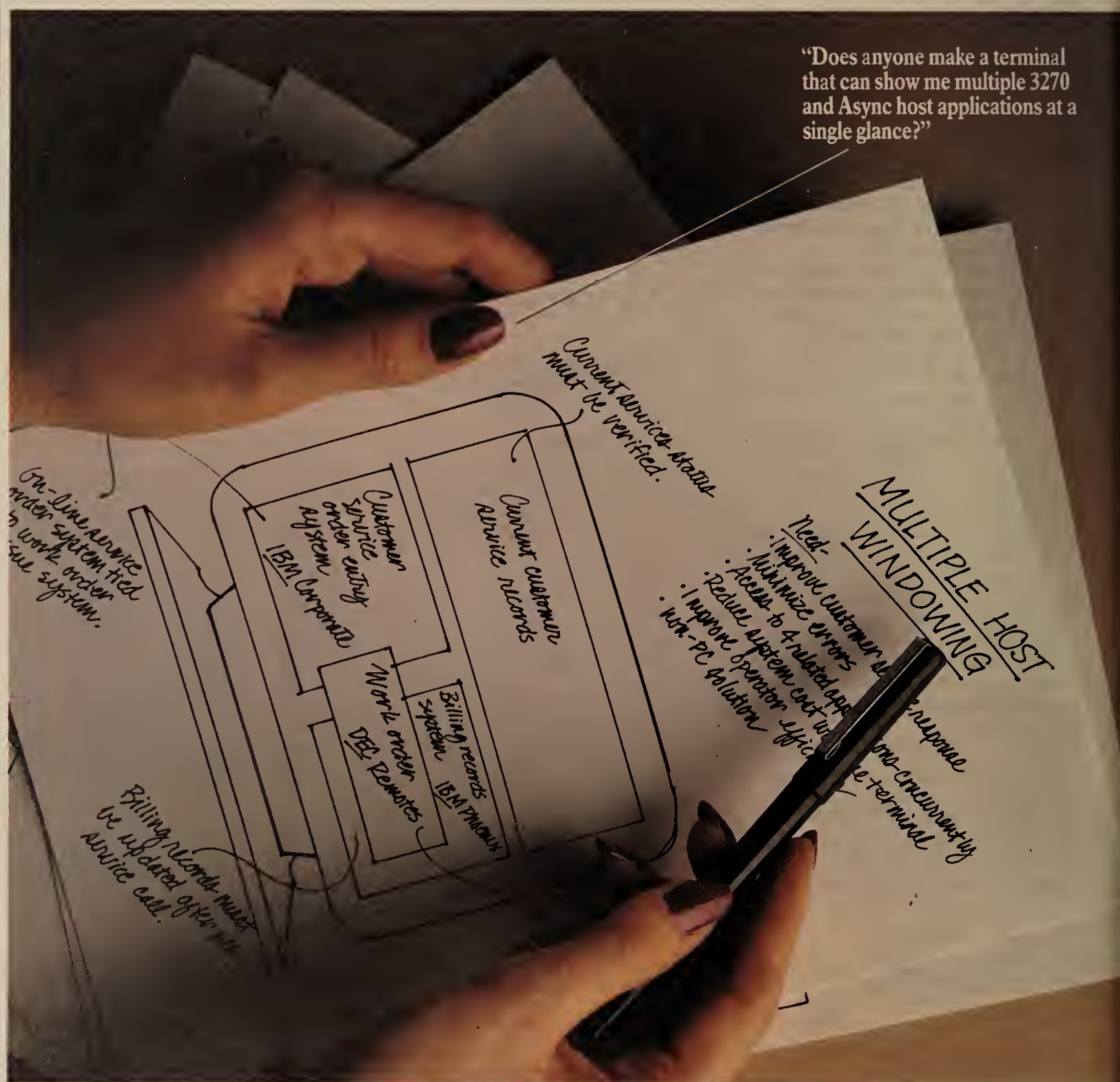
environment. The staff needs proper tools to work with, management understanding of their needs and available opportunities for advancement," he adds.

Ramada's Waite agrees. His employees work on IBM's Airline Control Program. "These are valuable people. They are in high demand, and they are highly paid, so money is not that much of an incentive. They are more interested in how they are treated. The way we keep them is to treat them like they are extremely important to us."

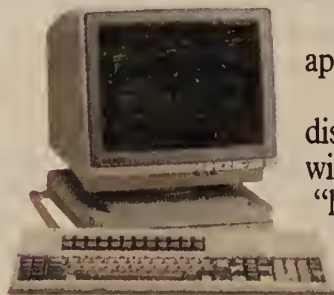
One of the many seemingly minor

conditions that can help keep good people interested in their jobs is fast response time on the computer system, says Ralph Hayhurst, vice-president of MIS at Hobart Corp. of Troy, Ohio. The 60 programmers in Hobart's IBM installation work in project teams. There are no awards or certificates to praise good work outside of the yearly salary remuneration that tries to place the programmers and analysts in the proper salary range for the work they do.

Rewards at Hobart take the form of a pleasant, professional work environment, interesting jobs as part of project teams and frequent reviews that spur proper training where employees need it most, Hayhurst says. "The best reward is recognition that the team is assigned to a good project and they have some visibility in the company for what they do."



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MANAGEMENT



MANAGERS ON THE MOVE

John P. Singleton has been named executive vice-president of Security Pacific Corp. of Los Angeles and chairman and chief executive officer of Security Pacific Automation Co. He succeeds **DuWayne J. Peterson Jr.**, who left Security Pacific last month to join Merrill Lynch & Co. as executive vice-president for operations systems and telecommunications, a newly created position.

Singleton was previously executive vice-president of Security Pacific National Bank and president of Security Pacific Automation.

Before joining Security Pacific in



John Singleton

1982, he was executive vice-president for operations and data processing organizations at Maryland National Bank.

Robin Martin, who has held technical and managerial positions at IBM since 1961, has been appointed as a vice-president for end-user computing services at Carter Hawley Hale Information Services of Anaheim, Calif. Martin, 47, will be responsible for the company's end-user computing and information management areas.

Since 1979, he has been an IBM branch market support manager working with the retail, media and petroleum industries. He began his career in information systems in 1955 with Douglas Aircraft Co.



Robin Martin

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Greenbelt, Md., has appointed two vice-presidents to its software division. **Donald R. Shaw** will be vice-president and general manager of the information technology division, heading the commercial software division in Princeton, N.J. **Arthur G. Mitchell** will be vice-president in charge of worldwide commercial software sales. He will be reporting to Shaw.

Paul E. Neal has been appointed vice-president of information services for Indianapolis Life Insurance Co. Neal's responsibilities include long-range planning and organizational development of information services operations as well as management of the department.

Alois J. Strnad has been named vice-president of management information systems at Tandem Computers, Inc. of Cupertino, Calif. Strnad, 49, assumes overall responsibility for the company's management information systems.

Dennis J. LaHood has been named director of management information



Dennis LaHood

services at Agway, Inc. of Syracuse, N.Y., an insurer and distributor of farm supplies and petroleum products. He has been the company's director of systems and development services.

Danners, Inc., an operator of discount stores based in Indianapolis, has named **Stephen E. Ogle** to the position of director of data processing and **Rebecca Clark** to information center supervisor.

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MANAGEMENT



CALENDAR

WEEK OF JUNE 15

JUNE 15-20, LONG BEACH, CALIF. — **1986 Government Management Information Sciences Conference.** Contact: Tom Lang, Assistant Chairman, Data Processing Department, 9150 E. Imperial Highway, Downey, Calif. 90242.

JUNE 16-18, UNIVERSAL CITY, CALIF. — **Synergy '86, Conference on Functional Interfacing for Computer-Integrated Manufacturing.** Contact: Cheri Willetts, Society of Manufacturing Engineers, P.O. Box

930, One SME Drive, Dearborn, Mich. 48121.

JUNE 16-19, LAS VEGAS — **The 1986 National Computer Conference.** Contact: National Computer Conference, 1899 Preston White Drive, Reston, Va. 22091.

JUNE 16-20, CAMBRIDGE, MASS. — **Managing Information Technology: New Responsibilities in a Changing Environment.** Contact: Center for Information Systems Research, Sloan School of Management, MIT, E40-193, 77 Massachusetts Ave., Cambridge, Mass. 02139.

JUNE 17-18, PLYMOUTH, MICH. — **Robotic End Effectors: Design and Applications Seminar.** Contact: Mary Dombrowski, Special Programs Division, Robotics International of the Society of Manufacturing Engineers, P.O. Box 930, One SME Drive, Dearborn, Mich. 48121.

JUNE 17-19, ATLANTIC CITY — **Plas-Tech '86.** Contact: Delia Associates, P.O. Box 338, Delia Marketing Communications Center, Whitehouse, N.J. 08888.

JUNE 18-20, TOKYO — **Marketing Opportunities Seminar.** Contact: Agnes M. Pavel, Program Director, U.S. Telecommunications Suppliers Association, Suite 1618, 333 N. Michigan Ave., Chicago, Ill. 60601.

WEEK OF JUNE 22

JUNE 22-27, PHILADELPHIA — **Management Information Systems for Strategic Advantage.** Contact: The Registrar, Office of Executive Education, 200 Vance Hall, The Wharton School of the University of Pennsylvania, Philadelphia, Pa. 19104.

JUNE 23-24, NEW YORK — **Applying Information Technology for Competitive Advantage.** Contact: Frank Lesh, Information Management Perspective, Inc., Suite 208, 5 Elm Row, New Brunswick, N.J. 08901.

JUNE 23-25, ALBUQUERQUE, N.M. — **Integrated Fiber-Optic Technology Training.** Contact: Linda Castle, Optoelectronic System Consultants, P.O. Box 35525, Albuquerque, N.M. 87176.

JUNE 23-25, MIAMI — **Electronic Data Processing Auditors Association 14th Annual International Conference.** Contact: EDPA, P.O. Box 88180, Carol Stream, Ill. 60188.

JUNE 23-26, BOSTON — **ATE East '86.** Contact: Registrar, Morgan-Grampian Expositions Group, 1050 Commonwealth Ave., Boston, Mass. 02215.

JUNE 23-27, AMSTERDAM — **Fourth Annual European Fiber-Optic Communications and Local-Area Networks Exposition.** Contact: Cheryl MacDonald, Information Gatekeepers, 214 Harvard Ave., Boston, Mass. 02134.

JUNE 23-27, CAMBRIDGE, MASS. — **Managerial Planning for the Security and Privacy of Contemporary Computer and Telecommunications Systems.** Contact: Prof. Gary Marx, Department of Urban Studies and Planning, MIT, 77 Massachusetts Ave., Cambridge, Mass. 02139.

JUNE 23-27, CHICAGO — **A/E/C Systems '86: The Computer and Management Show for the Design and Construction Industry.** Contact: Conference Director, A/E/C Systems '86, P.O. Box 11318, Newington, Conn. 06111.

JUNE 24-26, CHICAGO — **Structured Techniques Association III/Structured Techniques in the Eighties: Practice and Prospects.** Contact: Mary Anne Gabriel, Heller Financial Corp., 105 W. Adams St., Chicago, Ill. 60603.

JUNE 24-27, CHICAGO — **Autocad Expo '86.** Contact: William Ryan, Autocad Expo '86, Autodesk, Inc., 2320 Marinship Way, Sausalito, Calif. 94965.

JUNE 25, CHICAGO — **International Facility Management Association's Computer Applications for Facility Management.** Contact: IFMA, Suite 1410, 11 Greenway Plaza, Houston, Texas 77046.

JUNE 25-26, COATESVILLE, PA. — **Chester County Expo '86: CAD/CAM Conference from Micro to Mini.** Contact: Lee Smith, Central Chester County Vocational Technical School, 1635 E. Lincoln Highway, Coatesville, Pa. 19320.

WEEK OF JUNE 29

JULY 2-3, LAS VEGAS — **Full Meeting of the Design Automation Standards Subcommittee.** Contact: Ron Waxman, Design Automation Standards Subcommittee Co-Chairman, IBM FSD, 9500 Godwin Drive, Manassas, Va. 22110.

WEEK OF JULY 6

JULY 8-11, COLUMBIA, MD. — **The Technical Manager in a Changing Environment.** Contact: Continuing Education Institute, Suite 102, 21250 Califa St., Woodland Hills, Calif. 91367.

See **CALENDAR** page 112

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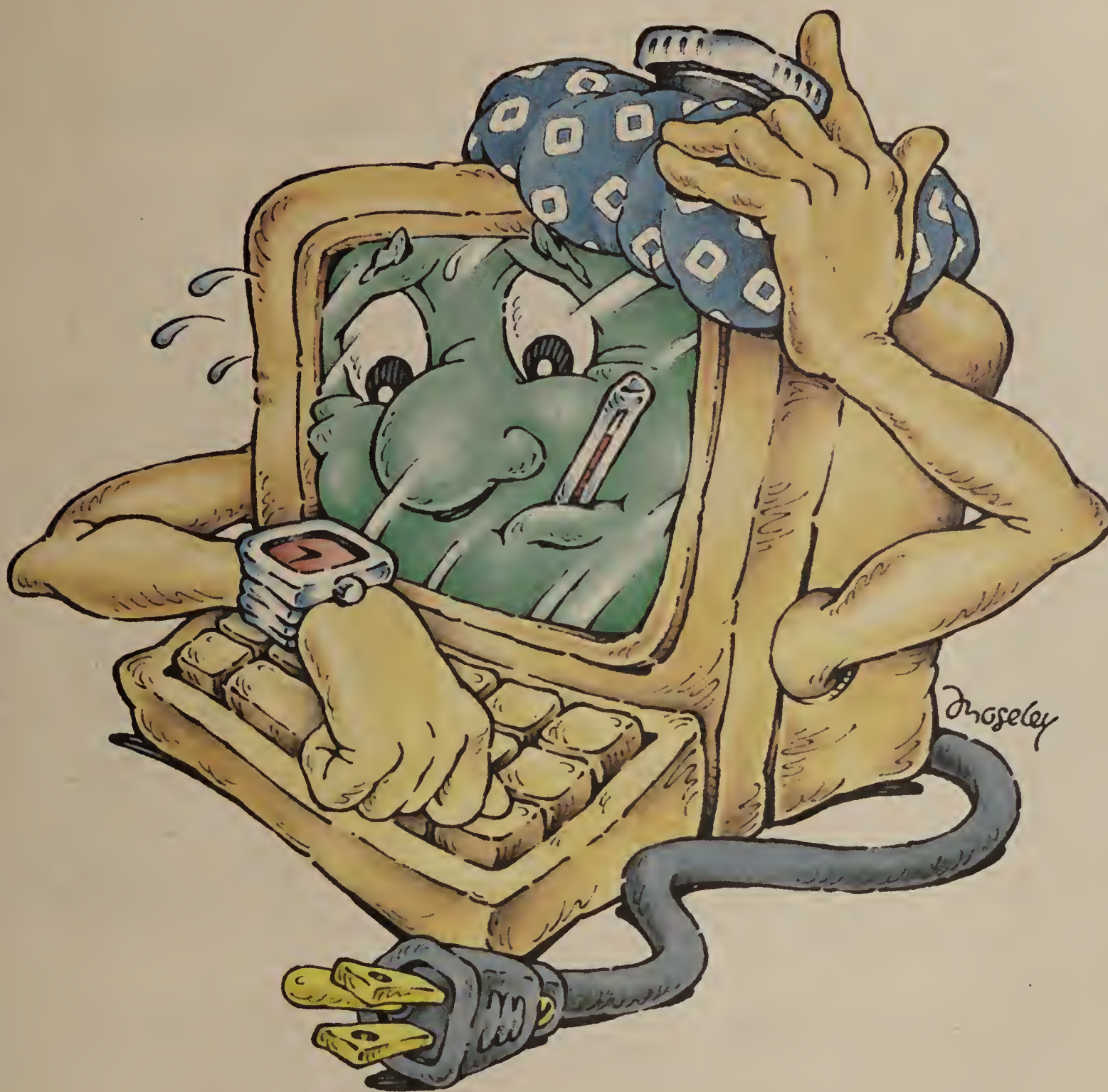
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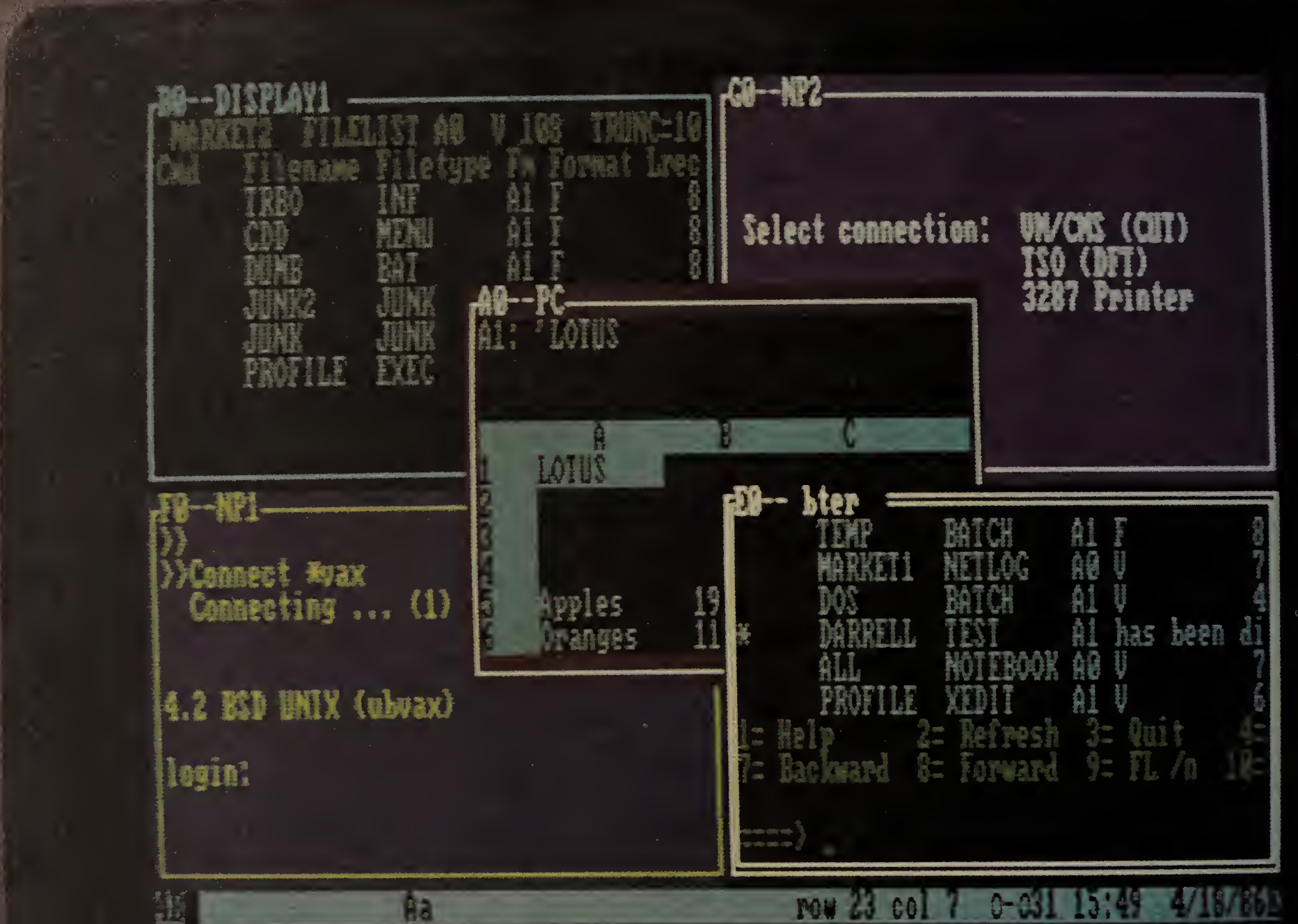
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MANAGEMENT

CALENDAR from page 106

JULY 9-11, NEW YORK — The Fourth Annual PC Expo. Contact: PC Expo, P.O. Box 1026, Englewood Cliffs, N.J. 07632.

WEEK OF JULY 13

JULY 13-18, CHICAGO — Guide 65. Contact: Guide International Corp., 111 E. Wacker Drive, Chicago, Ill. 60601.

WEEK OF JULY 20

JULY 23-25, BOSTON — Micro-trends '86, Education: Redirecting the Revolution. Contact: Bobbi Hunt, International Communications Industries Association, 3150 Spring St., Fairfax, Va. 22031.

WEEK OF JULY 27

JULY 27-31, ANAHEIM, CALIF. — Third Annual Information Center Conference & Exposition. Contact: Information Center Conference & Exposition, Weingarten Publications, Inc., 38 Chauncy St., Boston, Mass. 02111.

JULY 28-30, RENO, NEV. — 1986 Summer Computer Simulation Conference. Contact: The Society for Computer Simulation, P.O. Box 17900, San Diego, Calif. 92117.

WEEK OF AUG. 3

AUGUST 4-8, ANN ARBOR, MICH. — Contemporary Data Communication Networks: Planning,

Management and Computer-Based Design. Contact: Engineering Summer Conferences, 300 Chrysler Center/N. Campus, Ann Arbor, Mich. 48109.

WEEK OF AUG. 10

AUGUST 11-14, SNOWMASS, COLO. — AM/FM International Ninth Annual Conference. Contact: AM/FM International, Suite 820, 8775 E. Orchard Road, Englewood, Colo. 80111.

WEEK OF AUG. 17

AUGUST 18-22, DALLAS — Thirteenth Annual Conference on Computer Graphics and Interactive See CALENDAR page 113

Offshore data entry pays off

From page 103

including encyclopedias and other lengthy texts, business records, financial statements, statistics, order forms, ticket stubs and mailing lists. Hard copy is flown or sent by facsimile to the offshore site and returned either by air on tape or disk or electronically via satellite.

The one motive for moving data entry offshore has been lower wages, which the OTA found to range from one-fourth to one-fifteenth of those in the U.S., with lower wages in Asia than in the Caribbean and Ireland.

But companies considering the location of an offshore site look far beyond wage levels. With respect to the labor force alone, their key considerations include language, education and the work ethic.

Barbados retains a literacy rate of 95% — better than the U.S. — as a legacy of the British educational system, according to Joseph Stroop, a spokesman for American Airlines.

Fewer job opportunities in the Caribbean means data entry workers there tend to be better educated than their American counterparts, Bodek said.

Coached on 'how to work'

Workers in Jamaica did have to be coached on "how to work — to be on time and work efficiently," said Lawrence Bresnahan, president of Advanced Automation Associates of Andover, Mass., which produces data bases in Jamaica. But, Bresnahan said, "they're well educated, and they want to learn. They train well."

However, another service bureau, General Information Services of Philadelphia, passed over the Caribbean due to what it sees as an unfavorable work ethic, according to company President Bernard Davis.

Initially, General Information Services set up its data entry operation in Madras, India. After some "very bad experiences" with communications and transportation problems, the firm moved its operation to Dublin, where wages are higher but the work ethic benefits from an "achievement-oriented" population and "horrible weather," Davis said.

Other criteria for selecting a site include political stability, proximity to the U.S., communications facilities and infrastructural factors such as power supplies.

Barbados boasts of its telecommunications system, which includes a satellite connection, digital systems, private lines and fiber-optic cable. Davis said he is happy with communications with Ireland, noting that like the Caribbean, Ireland has the advantage of regular airline service to the U.S.

Bresnahan does point out occasional one-day delays in getting documents through customs in Jamaica and warns of the need for an uninterruptible power supply.

Data security is another concern with offshore entry. While some offshore operators encrypt transmissions, there is some "sensitive data" that will never be sent abroad, Bodek said. Much of the overseas work is "retro" entry of data such as encyclopedias and, in one case, all the Congressional speeches of representatives and senators, he said.



HOW ONE COMPANY MANAGES TO WIN ITS BURGER WARS.

At headquarters of a leading regional fast food chain, executives were looking for a way to beef up accountability. That's when they called in the data processing department.

The challenge was two-fold. Management wanted to monitor inventory store-by-store and distribute timely sales reports to each manager in the field.

Everything they needed to know was buried in the corporate computers. The trick was presenting it in a form that could be readily digested by the entire hamburger empire.

The objective was to find a system capable of generating hundreds of up-to-the-minute charts and graphs to help managers gauge burger consumption more accurately region by region.

After in-depth analysis, data processing recommended TELLAGRAF® and DISSPLA® graphics software from ISSCO. The system proved so successful in minimizing food

waste that the burger giant has extended implementation to all of its company and franchise stores.

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MANAGEMENT

Management at face value

From page 103

A much more reliable guide to a person's current mental and emotional state is the timbre and volume of their voice. They account for about 38% of the communication that takes place, for the most part unconsciously, during face-to-face meetings, Malandro says.

But the most potent carrier of a message is the impression an individual makes visually through cues like dress, eye contact, readiness to smile, posture and gestures. Appearance and behavior account for roughly 55% of the message, Malandro says.

"The decisions we make and the opinions we form about others are based primarily on perception," she says. The result can be an unwitting mixed message that coworkers find difficult to decipher.

A lack of ability at nonverbal communication can seriously damage an MIS chief's chances for future advancement, according to Dick Enslin, senior systems analyst with Baltimore-based Central Maryland Multiple List, Inc.

During a lengthy computing career that has included a stint as a DP chief at NCR, Enslin has observed ill effects of faulty nonverbal communication.

Some MIS managers, for example, take pains to express concern for their employees' welfare. But in the

next breath, they negate those sentiments with a nonverbal faux pas that says the opposite, according to Enslin.

His experiences convinced him that a low aptitude for interpersonal relations frequently alienates information systems executives from their staffs, tarnishes their professional images and undercuts their effectiveness as managers. "Many MIS directors simply lack the necessary skills to be good leaders and properly motivate their employees," he says.

Failure to master nonverbal communication can also alienate systems executives from their bosses and thus prevent them from advancing.

One remedy might lie in improving undergraduate instruction. "Many schools have been quite successful in giving their students a solid grounding in technology," says Robert Richter, MIS manager at Evansville, Wis.-based Baker Manufacturing Co. "But their efforts to teach 'people skills' have generally been a lot less effective."

Information systems executives might also pattern themselves after people who communicate well nonverbally. Malandro says most successful individuals have at least three personal characteristics in common. "They match the rhythm of every person with whom they deal," she said. "They use a lot of encouragers, including smiles, head-nodding and words of encouragement." Finally, she said, they avoid "leaking," or turning their bodies to one side, rather than facing their conversation partners squarely.

CALENDAR from page 112

Techniques. Contact: SIGGRAPH '86, Conference Management, Smith, Bucklin & Associates, Inc., 111 E. Wacker Drive, Chicago, Ill. 60601.

AUGUST 19-21, PHILADELPHIA — Second Annual Physical and Electronic Security Symposium and Exposition. Contact: Michael C. Otten, Booz, Allen and Hamilton, Inc., 4330 East-West Highway, Bethesda, Md. 20814.

WEEK OF AUG. 24

AUGUST 26-28, SAN MATEO, CALIF. — Interconnect '86. Contact: Agnes M. Pavel, Program Director, U.S. Telecommunications Suppliers Association, Suite 1618, 333 N. Michigan Ave., Chicago, Ill. 60601.

WEEK OF AUG. 31

SEPTEMBER 1-5, DUBLIN — International Federation for Information Processing Congress '86. Contact: IFIP Congress '86, 44 Northumberland Road, Dublin 4, Ireland.

SEPTEMBER 2-5, CHICAGO — Fourth Annual Office Automation Society International Conference. Contact: Sue Pickard, OASI, Suite B, 15269 Mimosa Trail, Dumfries, Va. 22026.

SEPTEMBER 3-5, LOS ANGELES — Telemarketing/West. Contact: Doug Shreve, The Telemarketing Foundation, Inc., P.O. Box 829, Arnold, Md. 21012.

WEEK OF SEPT. 7

SEPTEMBER 8-10, PHILADELPHIA — NCC — Telecommunications Conference. Contact: NCC-Telecommunications, American Federation of Information Processing Societies, 1899 Preston White Drive, Reston, Va. 22091.

SEPTEMBER 8-18, MONTREAL — 43rd FID Conference and Congress. Contact: Local Organizing Committee, FID 43rd Conference and Congress, C.P. 1144, Succursale Place Desjardins, Montreal, Quebec, Canada H5B 1B3.

SEPTEMBER 9-12, ANTWERP, BELGIUM — Second European Simulation Congress. Contact: The Society for Computer Simulation, c/o Ghislain C. Vansteenkiste, University of Ghent, Coupure Links 653, B-9000 Ghent, Belgium.

WEEK OF SEPT. 14

SEPTEMBER 18-19, MONTREAL — Canadian Office Machine Dealers Association/Candex. Contact: Roy Whitsed, Candex Conference, Inc., 47 Lakeshore Road E., Mississauga, Ont., Canada L5G 4L7.

WEEK OF SEPT. 21

SEPTEMBER 22-25, ORLANDO, FLA. — Space Tech '86. Contact: Society of Manufacturing Engineers Public Relations, Box 930, One SME Drive, Dearborn, Mich. 48121.

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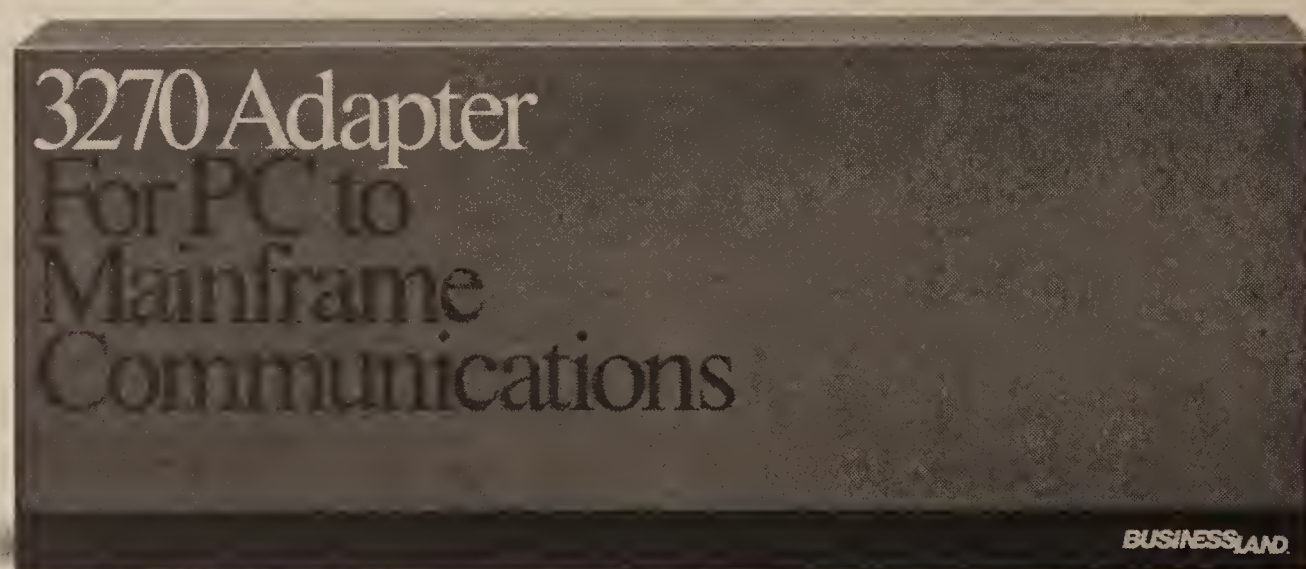
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NEW PRODUCTS

Software AG introduces net managers

Software AG of North America, Inc. of Reston, Va., has introduced two communications networking products: Com-Pose, an outline environment manager, and Net-Pass, a network parallel application session manager.

The Com-Pose system is the central communications manager for Software AG's Information Center, Development Center, Production Center, Office Automation and Communications system products. According to the vendor, users whose terminals are physically connected to CICS, TSO or CMS can logically connect to a Com-Pose system.

Com-Pose provides maintenance system support for existing applications. It is also said to provide Natural (the vendor's fourth-generation language), facilities, on-line printout spooling, interactive program development and maintenance, library and file management, commands and utilities for computer center control and job scheduling and management.

Com-Pose is operating system independent and provides interactive utility services for system programming functions supported by a menu-driven facility, the vendor said.

Com-Pose for IBM mainframes running MVS or DOS/VSE costs \$45,000 or \$35,000, respectively. The system will be available in July.

Net-Pass enables terminal users to manage several logical terminal sessions from the same IBM 3270-type terminal. Simultaneous Com-Plete or CICS sessions, different Com-Pletes or various teleprocessing monitors such as CICS, TSO, Roscoe or IMS can be maintained.

Net-Pass handling of these sessions is reportedly transparent to the user. Net-Pass acts as an intermediary between terminals and applications by performing services the applications do not perform, such as screen-to-hard-copy, screen-to-screen and data compression.

According to the vendor, Net-Pass can be customized to individual specifications.

Net-Pass for IBM mainframe systems running MVS/XA, OS/VS1 and DOS/VSE costs \$25,000, \$20,000 and \$15,000, respectively. It will be available in October.

Interface unveils printer

Dot matrix tabletop offers graphics in seven colors

The ISI 468 IBM 3270-compatible printer, said to produce IBM Programmed Symbols graphics in up to seven colors, has bowed from Interface Systems, Inc. of Ann Arbor, Mich.

The ISI 468 is a tabletop dot matrix, plug-compatible replacement for IBM 3268 Model 2C and 3287 Model 2C printers. The seven colors offered are black, red, blue, green, turquoise, yellow and pink.

According to the vendor, the ISI 468 prints at 400 char./sec. in draft mode and 100 char./sec. in near-letter-quality mode. Character spacing for standard-size output can be 10, 12 or 16.67 char./in. Other features include bar coding, large-character label printing, a demand documents tear bar for reduced forms waste and a switch-selectable coaxial Centronics Data Computer Corp. parallel port for connection to IBM Personal Computers as well as 3270 systems.

The top-loading printer handles continuous-feed forms that are 3 in. to 15 in. wide with up to six parts. Individual sheets can be fed manually or loaded automatically through an optional sheet and envelope feeder.

The ISI 468 can be directly connected to an IBM 3274, 3276, 4300 or Personal Computer system. It offers standard coaxial



Interface Systems' ISI 468 printer is IBM 3270 compatible.

support for the Synchronous Data Link Control standard and Small Computer System interface. It also offers an extended print buffer for local copy support for the IBM 3179 and 3279 monochrome display stations and the 3279-3A and 3279-3B color display stations. When connected to IBM PCs, it emulates the IBM 5152 personal printer's text printing functions.

Color software, a color display or controller are not required to print in color, the vendor said. Users of monochrome displays can make full use of the printer's color output capabilities.

The ISI 468 seven-color printer is priced at \$6,450. It is also available on a 24-month lease for \$300/mo and a 36-month lease for \$270/mo.

IBM expands its modem line

IBM recently expanded its line of modems with the introduction of several models. New models of the 5865, 5866 and 5868 modem series transmit at either 9.6K or 14.4K bit/sec. over four-wire, point-to-point links. The 14.4K bit/sec. 5866 and 5868 Model 62 use Trellis Coding error correction protocols.

All new models feature Communication Network Management (CNM) functions such as local and remote self-test and status reports. According to IBM, CNM only works in synchronous mode, in conjunction with Netview, IBM's new network management product for Systems Network Architecture (SNA) networks.

The 5865/66 Model 2 will be available

in July. The 5865/66 Model 3 and 5868 Models 52 and 62 will ship in October.

The 5811/12 limited-distance modems, designed for short-haul communications, are lower priced and offer fewer functions than long-haul modems, IBM said. They support full-duplex synchronous or asynchronous data transmission at rates of up to 19.2K bit/sec. over four-wire circuits. The 5812 offers CNM functions.

The 5811 series modems offer the same capabilities of the 5812 series, with the exception of CNM. Both series are compatible with the IBM Cabling System. Prices for the 5811 begin at \$1,100; the 5812 begins at \$700. Both will be available in the first quarter of 1987.

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Datatest, Dow Jones team up to provide business software

Mix CD-ROM, on-line access to financial data

Datatest, Inc. of Woburn, Mass., and Dow Jones & Co. have announced CD/Newsline, a business information product said to integrate Datatest's Corporate Database published on compact optical disks with menu-driven access to on-line news stories and stock quotes from Dow Jones News/Retrieval.

CD/Newsline uses an IBM Personal Computer, data base software, display, communications software, a modem and a compact-disk read-only

memory (CD-ROM) and drive to provide numeric and textural information on all public companies traded on the New York, American, over-the-counter and regional stock exchanges.

Datatest's Corporate Database reportedly holds 250,000 pages of business information providing a history of corporate financial results from as far back as seven years. Data on 10,000 public companies, executives and nearly 100 industries is included. Information in the Dow Jones News/Retrieval service is available up-to-the-minute.

According to a Datatest spokesman, combining the two services can

provide users with an overall financial picture of a company. Available information includes financial statements, annual reports, investment analyst reports, business literature and trade press abstracts, biographies of corporate offices and directors, current and historical stock price and trading data as well as current business and financial news developments.

The CD/Newsline software enables users to switch between the two sources of information, retrieving data from both. Also, it is said to automatically handle the logon and search routines necessary to access the information found on the Dow

Jones News/Retrieval service.

Other features include formatting and report-generating capabilities and compatibility with other personal computer applications such as Lotus Development Corp.'s 1-2-3, Ashton-Tate's Multimate and Micropro International Corp.'s Wordstar. Data or text from CD/Newsline can be transferred to existing spreadsheets or word processing documents.

CD/Newsline is a subscription-based product. The basic configuration, including a subscription to one CD-ROM disk from the Corporate Database, is priced at \$14,100 per year. Delivery is expected to begin in the fourth quarter of this year.

NEW PRODUCTS/SOFTWARE & SERVICES

SOFTWARE
& SERVICES

Systems software

Radian Corp. has ported its **Rulemaster** software program for developing expert systems to the Digital Equipment Corp. Microvax workstation.

Rulemaster allows users to develop applications on the VAX under VMS and run them on the VAX, on Unix-based systems, PC-DOS- or MS-DOS-based systems or on custom-designed microprocessor-based systems. Features include interprocess communication and the ability to generate a compilable C-code representation of the expert system.

Rulemaster for single-user workstations costs \$5,000. For multiuser systems it costs \$17,500. The DOS version costs \$995.

Radian Corp., P.O. Box 9948, 8501 Mo-Pac Blvd., Austin, Texas 78766.

Boston Systems Office, Inc. has introduced the **BSO/Assembler II** family, a relocatable assembler for the Motorola, Inc. 68020.

The assembler was designed for use on Digital Equipment Corp. VAX-based systems. It supports the Motorola specified instruction set with both mnemonics and instruction syntax.

The assembler supports all data storage directives, including real-number constants and 32-bit expressions.

BSO/Assembler is priced starting at \$4,900.

Boston Systems Office, 128 Technology Center, Waltham, Mass. 02254.

Convex Computer Corp. has announced the **Math Advantage** software package to run on its C-1 super-

computer system.

The Convex Math Advantage is a software library of 176 engineering and scientific subroutines. The subroutines provide functions used in signal and seismic processing, mechanical design, simulation, image processing and general scientific computing.

Convex Math Advantage is priced at \$10,000. Source code costs \$15,000.

Convex Computer, 701 N. Plano Road, Richardson, Texas 75081.

Parity Computer Systems, Inc. has introduced **Tracs**, a software product designed for data acquisition, analysis and control on Digital Equipment Corp.'s VAX systems.

Tracs collects data from intelligent devices, on-line definition of collections of input channels, real-time monitoring of the data acquisition process and manipulation of polling parameters.

Tracs supports a concurrent multiuser environment.

Features include real-time numerical or graphical display and analytical graphics.

A single CPU license starts at \$5,000.

Parity Computer Systems, 10 E. Athens Ave., Ardmore, Pa. 19003.

Applications packages

Litton Industrial Automation Systems has announced the **Litton Conventional Warehouse Software System (CWSS)**, an inven-

tory and work order control software package for manual storage warehouses.

The menu-driven system is capable of storing and tracking different parts in quantities ranging up to 100,000. The software can bar code each incoming item.

CWSS is priced starting at \$72,000 on the IBM Personal Computer AT. It also runs on the IBM Series 1 computers.

Litton, 5825 Oberlin Drive, San Diego, Calif. 92121.

Announcing TI's Second Satellite Symposium: A To Getting Started.



"To help you get started in AI we have assigned one of our top scientists —Dr. Harry R. Tennant—to explore with you the work of today's leading authorities and practical appliers, and to bring you their best advice."

Dr. George Heilmeyer, Senior Vice President and Chief Technical Officer, Texas Instruments

CORRECTIONS

Able Computer's Able QDHU communication controller [CW, May 12, page 143] sells for \$1,295.

Vocam Systems, Inc. [CW, April 14, page 105] is located in Bloomington, Minn.

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NEW PRODUCTS/SOFTWARE & SERVICES

The **Informatics Legal Systems Division of Sterling Software** has announced **Prestige**, a series of seven prepackaged systems said to address the automation needs of mid-size law firms.

The packages were designed to run on Wang Laboratories, Inc. VS5 or VS6 minicomputers. The packages cover the applications of automated time and billing, bill editing, word processing and electronic mail.

The integrated packages

are priced from \$41,000 to \$106,000 each.

Sterling Informatics, Legal Systems Division, 2111 E. Highland Ave., Phoenix, Ariz. 85016.

■ **IBM** has announced **CATIA Building Design**, an addition to the computer graphics-aided, three-dimensional interactive application system developed by Dessault Systems.

CATIA Building Design is an application for creating, modifying and managing structural elements and objects in a two-dimensional environment. It provides an integrated set of applications and a data base for structures, building design and facilities management featuring drafting, 2-D and 3-D wireframe design, surface modeling, solids modeling and shading.

Prices start at \$400/mo for a single-user license.

IBM, 900 King St., Rye Brook, N.Y. 10573.

Utilities

Data Design Associates has announced **DD-EDI**, an add-on module for its mainframe Accounts Payable and Purchase Order Control System and DD-AIM translator program.

DD-EDI is an electronic data interchange system. It allows DD-AIM to handle electronic invoices in stan-

dard formats. Users can translate both the standard and nonstandard formats into Data Design's accounts payable format and validate outside-vendor control amounts prior to transmitting data to the accounts payable system.

DD-EDI is priced at \$5,000.

Data Design Associates, 1279 Oakmead Pkwy., Sunnyvale, Calif. 94086.

■ **Boston Systems Office, Inc.** has announced **BSO/Debug**, a debugger designed for use on Digital Equipment Corp.'s Microvax II.

According to the vendor, BSO/Debug provides instantaneous program patch capability for developing programs for the Motorola, Inc. 68000, 68010 and 68020 family and the Intel Corp. 8086, 8186 and 8286 family. It allows software applications to be debugged before going to the hardware prototype.

BSO/Debug offers support for interrupts, I/Os, read-only memory and random-access memory segmentation and instruction timing.

BSO/Debug is priced from \$5,000.

Boston Systems Office, 128 Technology Center, Waltham, Mass. 02254.

MICROS

Software applications packages

Hewlett-Packard Co. has announced the **HP 64228S emulator**, said to provide full-feature emulation and software support of the Intel Corp. 80286 microprocessor in the HP 64000 logic-development system.

The 64000 system is said to support both the real-address and protected virtual-address modes of 80286 operation with full emulation and development capabilities. The 64228S provides an environment for designing, testing and integrating hardware and software development.

Features reportedly include real-time execution up to 8 MHz with no wait states and up to 1M byte of emulation memory.

The HP 64228S costs \$9,400.

Hewlett-Packard, 1820 Embarcadero Road, Palo Alto, Calif. 94303.

Announcing
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SEE PAGE
139

Artificial Intelligence Step-By-Step Guide

For companies, laboratories, universities,
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On June 25, 1986

On November 13, 1985, more than 30,000 people participated in TI's first satellite symposium on AI—and 97.5% expressed interest in another one.

Announcing "Knowledge-Based Systems: A Step-By-Step Guide To Getting Started."

Symposium II is designed for managers and visionary technologists who may already be involved in AI or beginning to explore its potential. And, you need not have participated in the first symposium to benefit from this one.

Dr. Harry R. Tennant has devoted months of research surveying the work of world-class AI experts. Dr. Tennant will present the results of his investigation into the practical experiences of people directly involved in implementing knowledge-based systems.

Through on-screen interviews and interpretative commentary, Dr. Tennant will bring you much of the best advice and practical know-how that exists today.

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Dr. Harry R. Tennant. Senior Member Technical Staff and manager of artificial intelligence research in TI's Computer Science Laboratory. Invented the concept of menu-based natural language understanding. Involved in knowledge representation systems, expert systems, logic programming, information management, and working LISP systems into the PC and other small computers. Author of "Natural Language Processing: An Introduction to an Emerging Technology." Selected as one of America's top scientists under the age of 40 by "Science Digest" magazine.

Association of Artificial Intelligence, and Dr. John D. McDermott, Founder and Vice President of Operations of the Carnegie Group, who turned an uncommon number of his expert systems research projects into successful applications.

You'll also hear from executives and innovators of some of the key software tools used for development of expert systems: Thomas P. Kehler, Chairman of the Board and Chief Executive Officer of Intellicorp. James C. Williams, Vice President of Technology of Inference Corporation.

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NEW PRODUCTS/MICROCOMPUTERS

USA/Unlimited Software Associates, Inc. has announced **Quick Quality Analysis (QQA)**, software for estimating the effectiveness of quality control techniques.

QQA models quality control techniques including functional specification review, logic specification review, module logic inspections, code inspection, unit test, function test, subsystem test and system test.

It quantifies the costs of implementation, calculates potential savings and displays projected benefits, according to the vendor. "What-if" scenarios display varying returns on investments, project impacts and benefits.

QQA runs on the IBM family of Personal Computers. It costs \$995.

USA/Unlimited Software Associates, 457 Coldstream Drive, Berwyn, Pa. 19312.

Standard Econometrics Corp. has released a **business forecasting system** for financial planners and market analysts.

The system is said to be driven with 15-month economic forecasts distributed by the vendor on diskettes with monthly updates and forecast revisions.

The menu-driven system operates on IBM PC-DOS 2.0 or higher. According to the vendor, the forecasting system enables clients to forecast sales, orders or revenue statistics by creating multiple regression models. Users of Lotus Development Corp.'s 1-2-3 can transfer data and forecasts to spreadsheets.

The system is priced at \$150, and the Lotus data transfer program is priced at \$25.

Standard Econometrics, P.O. Box 44026, Indianapolis, Ind. 46244.

The Software Group at Pugh-Roberts Associates, Inc. has announced **Professional Dynamo (PD)** and **Professional Dynamo Plus (PD Plus)**, modeling environments for continuous simulation on personal computers and workstations.

The PD modeling environment includes a full-featured editor, an intelligent compiler, a simulator that allows users to change input values between runs, an automatic viewer that produces plots and tabular output and a documentor that converts models into a standard format and provides referencing tools.

In addition, PD Plus contains a report generator, a model interface builder and a split-screen editor.

PD and PD Plus cost \$495 and \$1,995, respectively.

Pugh-Roberts Associates, Five Lee St., Cambridge, Mass. 02139.

Software languages

Unipress Software, Inc. has ported the **Lattice C Cross compiler** to the AT&T Personal Computer 6300 Plus running under the Unix operating system.

The Lattice C Cross compiler is said to provide users with the ability to generate executable Microsoft Corp. MS-DOS code with the AT&T PC 6300 Plus multiuser Unix computer. It implements the full C language and library.

The Lattice C Cross compiler includes a linker, librarian, disassembler and floating-point support.

For the AT&T OC 6300 Plus, the Lattice C Cross compiler costs \$795.

Unipress Software, 2025 Lincoln Highway, Edison, N.J. 08817.

Software utilities

Intel Corp. has announced **Ipat**, a performance analysis tool hosted on the IBM Personal Computer AT, XT and Intel development systems.

Ipat is said to monitor the performance and completeness of test cases for microprocessor-based software. It displays information in histograms and code coverage maps.

Ipat consists of a base unit and power supply plus a target interface and control software. It supports operation with Intel's Integrated In-Circuit Emulator for analysis of software based on Intel's 8086, 8088, 80186, 80188 and 80286 microprocessors.

Ipat costs \$9,995.

Intel, W-3030, 3065 Bowers Ave., Santa Clara, Calif. 95051.

Rabar Systems International has announced **CTLlaser**, a memory-resident, menu-driven program for sending commands to the Hewlett-Packard Co. Laserjet printer.

The software enables the user to change orientation to portrait or landscape mode, change font, type style, pitch, point, page length, margin settings and more without exiting from the spreadsheet or word processing program currently in use.

CTLlaser runs on any IBM Personal Computer or compatible under Microsoft Corp. MS-DOS or IBM PC-DOS. It costs \$65.

Rabar Systems, P.O. Box 306, Westport, Conn. 06881.

James River Group, Inc. has announced the **Business Toolbox Series**, 20 business utility programs said to run on Digital Research, Inc. CPM computers and Microsoft Corp. MS-DOS computers.

Some of the utilities were designed to interact with the modules of James River's Accounting for Micros small business system. Other utilities are stand-alone programs such as T-Man, a mailing list and notebook, and Loans, for calculating loan payments and printing a payment schedule.

Prices range from \$40 to \$95.

James River Group, 125 N. First St., Minneapolis, Minn. 55401.

Logic Development Corp. has announced **QE**, an editor for programmers using QNE International's Q-Pro 4 fourth-generation applications de-

Continued on page 122

Networking tools for the OEM and Systems Integrator.

Programmability

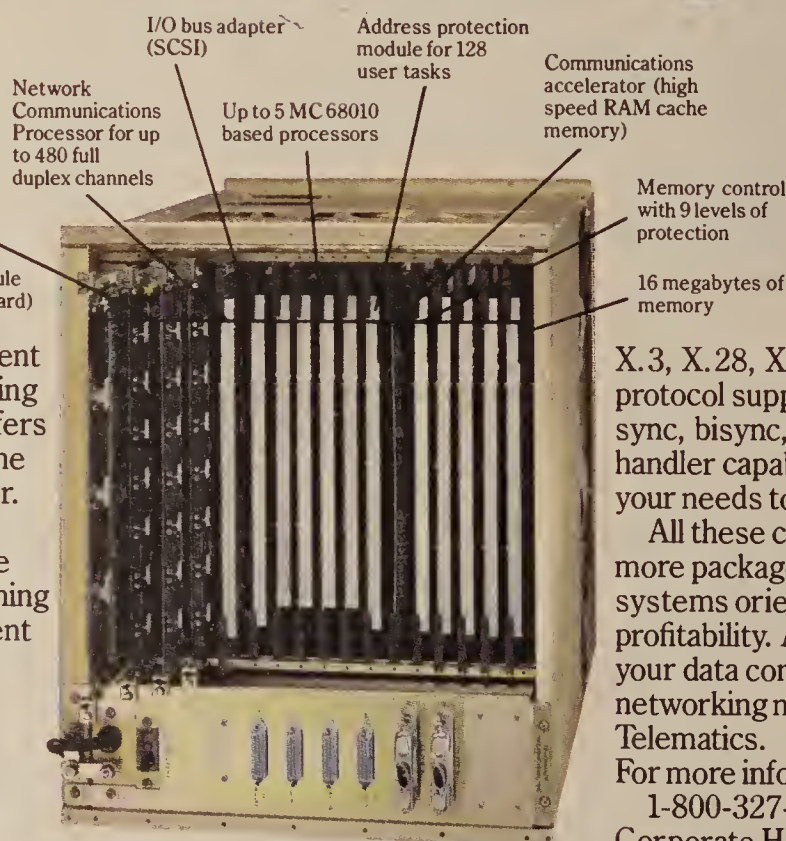
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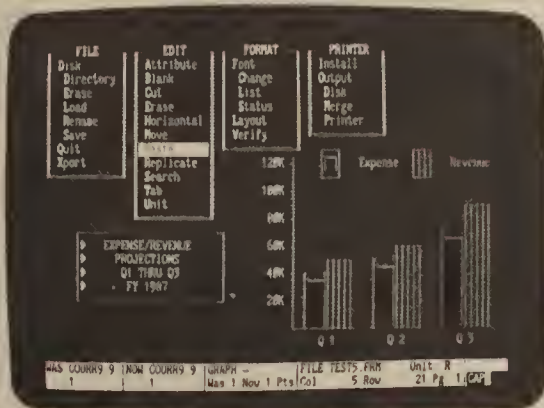
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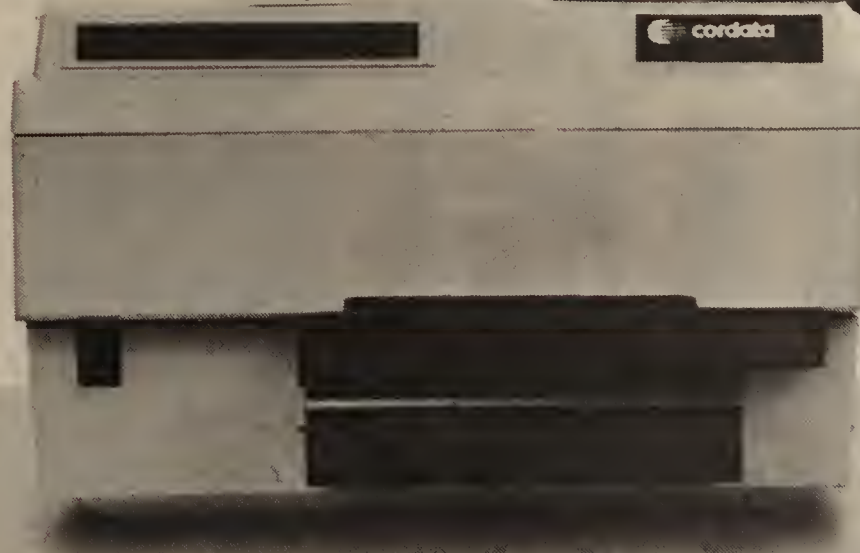


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Counts.

Today's system software buying decisions will affect your company for years to come.

Before you select a vendor, talk to people you can trust.

If you're about to invest in system software for your mainframe, here's some free advice that may surprise you:

Go slowly.

The decision you're making will be felt for years to come throughout your entire organization. So don't try to short-cut the selection process.

And in particular, don't make a decision without talking to people with first-hand experience — the users of the products in question.

Naturally, we believe that Software AG products offer the best solutions available to the problems you face. And we'd like to have an opportunity to convince you — not by competitive claims and counterclaims, but by demonstrated performance in real-world customer sites.

In the meantime, we'd like to offer a few thoughts on some factors that contribute to performance.

Needed: integrated, long-term, worldwide solutions.

If you've been involved in data processing for any length of time, you already know more than enough about the dangers of piecemeal "quick fixes". You don't have to be sold on the value of integrated tools that meet a full range of organizational needs through a common syntax and shared procedures.

But while many vendors preach integration, few practice it on the scale of Software AG. From our core products, ADABAS and NATURAL, we have created an entire universe of software products that simultaneously meet the needs of everyone from MIS professionals to end users with no programming experience.

We're also integrated in another way — geographically. As more and more organizations seek to coordinate resources and data on a worldwide basis, they need a caliber of support that is consistent worldwide. Software AG's reach is unique among independent software vendors — with products installed in 52 countries.

Fourth-generation technology: Who needs it? Who's got it?

A lot of vendors have expended a lot of hot air on the subject of fourth-generation languages. And we'd be the last to deny that a well-designed 4GL like NATURAL can be a phenomenal productivity tool — as much as 10 to 20 times more productive than COBOL, for instance.

But the language itself is only part of the story. Because in committing to a fourth generation system, you're really committing to an entire technology for meeting your organization's needs. You'd better be sure that technology

includes everything you need — from DBMS, 4GL, and data dictionary to end-user computing tools, office systems, micro/mainframe links, and intersystem communication facilities. If it doesn't, you may be looking at only a partial solution.

In any case, don't evaluate a 4GL by itself. Evaluate it in relation to the other products that are required to satisfy your total information needs. Do they share a common architecture or syntax? Were they designed together, or are they simply marketed together? And most important of all, how do people like working with them?

We *know* how people like working with NATURAL. After all, it's the world's most widely installed, widely experienced fourth-generation language — used by over 75,000 programmers. If you're looking for insights into 4GL technology, you might start by talking with one of them.

Industry surveys repeatedly rate Software AG #1.

It's one thing for a vendor to be proud of its products. It's another for an entire industry to share in that high regard.

Yet that's just what's been happening with Software AG products. For several years, *Datapro* and *Datamation* have both published annual surveys of system software users. And Software AG has repeatedly come out on top by a variety of yardsicks. That's not rhetoric — that's performance.

Software AG: high-performance vendor to over 2000 customers.

Because system software is a long-term investment for most organizations, it inevitably carries with it a long-term relationship with the software vendor.

And for many years, we and our users have recognized the importance of that relationship. In fact, we have worked together to shape it in the interests of delivering the best possible product performance.

But while we're glad our users take the trouble to respond to surveys, we have no control over their comments.

Which makes it all the more gratifying to see the survey results. And all the more imperative that you hear what users have to say — before you buy.

Just give us a call today. Or send in the coupon. We'll be glad to put you in touch with Software AG users in situations comparable to yours, so you can find out for yourself what industry insiders have known all along:

Anyone can talk. But when it comes to performance, Software AG stands alone.

Call us at 1-800-336-3761.
(In Virginia and Canada, call 1-703-860-5050.)

I'm tired of talk. Let me see some performance.

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Company _____

Address _____

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11800 Sunrise Valley Drive, Reston, VA 22091 CW0609

Uptime

Provide 24 Hour CICS Service

IBM gave dynamic file allocation to CICS... but you need Netec's CAFC to make non-stop, round-the-clock CICS a reality. CAFC allows a single command to OPEN or CLOSE 5 or 50 files and to enable or disable the transactions. It allows CICS and your batch programs to automatically add, remove and share files.

Browse, Print and Archive CICS Dumps

The CICS Dump Display Facility offers a variety of access modes for transaction and formatted dumps. You may view or print any dump without disturbing CICS. You may selectively inhibit dump generation or archive the dumps for after-the-fact off-line analysis. CDDF automatically switches the dump data sets for you.



Netec International, Inc.
P.O. Box 18538 • Dallas, TX 75218
(214) 324-2848 • Telex 314419 TELECOM UD

Computerworld's New MICRO DIRECT SHOPPER.

An easy way for you to order micro products.

Now you can order microcomputer products directly from suppliers through Computerworld's new MICRO DIRECT SHOPPER.

Computerworld's display classified section now includes MICRO DIRECT SHOPPER, an all new section designed especially for companies that sell their micro products by mail or telephone orders.

This can mean a savings of money, time and energy in locating and acquiring the micro products that you need. MICRO DIRECT SHOPPER will appear preceeding the Buy-Sell-Swap section every week in Computerworld.

See page 139

COMPUTERWORLD

A PUBLICATION OF
CW COMMUNICATIONS

NEW PRODUCTS/MICROCOMPUTERS

Continued from page 118

velopment system for microcomputers.

QE is said to be a tool for creating and maintaining programs written in Q-Pro 4 and can be used as a replacement for, or in conjunction with, the Q-Pro 4 editor.

QE allows full-screen concurrent editing. It features pop-up windows, insert and delete modes and merging of external program text and fields by row number.

QE costs \$69.95.

Logic Development, 12 Garland Lane, Willingboro, N.J. 08046.

Pansophic Systems, Inc. has announced **Easytrieve Plus PC**, a version of its Easytrieve Plus information retrieval and data management

system for IBM Personal Computers and compatibles.

The PC version features the same syntax as the mainframe version, allowing offloading of reporting to personal computers. Additional features include forms creation for data entry, a data base for storing data, an editor for entering and correcting jobs and Help windows.

The program reads Lotus Development Corp., PRN and ASCII files.

Easytrieve Plus PC is available on a site-license basis. A 30-copy license costs \$19,000.

Pansophic Systems, 709 Enterprise Drive, Oak Brook, Ill. 60521.

COMMUNICATIONS

Protocol converters

Pyramid Technology Corp. has announced Remote Job Entry (RJE)-Hasp communications capability for its **90 Series** and **Workcenter** product lines.

RJE-Hasp permits a Pyramid system to act as a communication gateway to IBM mainframes via the RJE-Hasp workstation protocol, according to the vendor.

Pyramid's implementation supports Hasp multileaving, seven input channels, seven printer output channels, seven punch-format output channels and operator console channels. These functions operate at speeds up to 56K bit/sec.

Adding RJE-Hasp capability requires Pyramid's General Purpose Synchronous Communications controller board, for \$9,800, and the RJE-Hasp Program package, for \$5,000.

Pyramid Technology, 1295 Charleston Road, Mountain View, Calif. 94043.

Software

Rolm Corp. has announced **Cypress Release 3**, enhanced software for its Cypress personal communications terminal.

Cypress Release 3 allows users to autodial telephone numbers or account codes from a host data application screen. It also features added terminal emulations such as Digital Equipment Corp. VT220 and Data General Corp. Dasher D210, according to the vendor.

Other features of Cypress Release 3 include an expanded data group line and password capabilities as well as improved access to public and private data bases.

Available in July, Release 3 is priced at \$1,500.

Rolm, 4900 Old Ironsides Drive, Santa Clara, Calif. 95054.

Multiplexers/Modems

Data Race, Inc. has announced an upright tower model of its **Race** high-speed full-duplex modem.

The Race modem was designed for interactive applications over dial-up telephone lines by users of asynchronous ASCII terminals and personal computers.

According to the vendor, the Race tower offers an ergonomic display and a footprint only 2 in. by 12 in. Other features are said to include error-protected operation with throughput of over 1,000 char./sec. on dial-up lines.

The Race modem is priced at

Continued on page 127

HOW TO BE IN 6 PLACES AT ONCE.

Only a Falco 500 Multi-Host Terminal can open windows onto all these worlds-today.

No other product in its class delivers productivity like the Falco 500 Multi-Host Terminal.

1. THE ANSI WORLD OF DEC MINICOMPUTERS.



Because no one can match its high-performance specs. Which are—in a word—*spectacular*.

For openers, take the Falco 500's multi-host capabilities. They let you communicate with separate computers through two bidirectional ports—*concurrently*. Ports that can be configured automatically

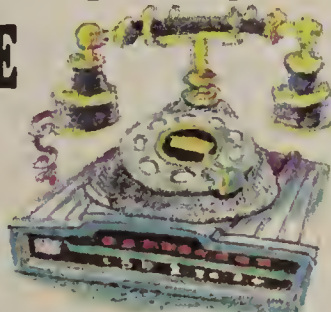
2. THE UNIX WORLD.

as RS232C or RS422. So you can enter or retrieve data from any of the computer worlds shown here—plus hundreds of others. And switch between any of them with a single keystroke. *No other terminal today offers this kind of multi-host capability.* Period.

Then too, nobody does win-

dows like the Falco 500. Nobody. It lets you create six windows on one screen—each one configured as a separate terminal. That means each one has its own operating

3. THE REMOTE TELECOM WORLD.



mode, compatible with virtually all ANSI and ASCII terminal protocols. Plus its own set of 64 programmable function key levels. And its own segment of dedicated display memory. Meanwhile, the competition's only got split screens. No contest there, either.

4. THE ELECTRONIC-MAIL WORLD.



Maybe you don't need to talk to this many applications from a single terminal—today.

But if you're getting ready to install multiple computers or replace single-function terminals—don't. Until you look at the Falco 500.

It's the only terminal that lets your operators be in six places at once—getting lots more work done. And the only one that doesn't mind if those places are ANSI- or ASCII-oriented; mainframe, mini or micro; or located in an office, factory or engineering lab. Plus the

5. THE LOCAL AREA NETWORK WORLD.



adaptability of the Falco 500 means you no longer need several terminals doing just one thing at a time. Because it does six things on one terminal—half a dozen on another.

To start opening windows today on a more productive, multi-host world, contact your

6. THE ASCII WORLD OF SUPERMINIS AND MICROS.



Falco distributor.

For the one nearest you, contact Falco Data Products, 1294 Hammerwood Avenue, Sunnyvale, CA 94089; (408) 745-7123. Toll-free (800) 835-8765.



FALCO 500

THE SPECTACULAR
PRODUCTIVITY MACHINE.



Client Data Base			
Digital Computer	VAX/VMS	30 terminals	5 workstations
General Electronics	1170/RT11	10 terminals	no workstations
Chicago Elect. Sales	PDP8	01 terminals	no workstations
2nd Street Banking	8600	52 terminals	10 workstations
Jacks Elect. Outlet	VAX/VMS	29 terminals	no workstations
Sansone Bail Bond	PDP	01 terminals	01 workstations
Sunnyvale Digits	PR0350	01 terminals	no workstations

Select one of the following:
1--Continue Listing
2--Sort by (N)ame, (C)omputer Model
3--End Session
Enter Selection: █

Introducing the most reliable DECTM-compatible terminal ever built. The TeleVideo 9220.

"Why do we own thousands of TeleVideo[®] terminals? Because we can't afford thousands of problems!"

Susan Kennedy is a product analyst at Leasametric, a company that rents, sells, and services DP equipment all over the country. Including thousands of terminals. And if reliability is important to the average user, it's critical to Leasametric. Because everything they offer not only has to stand up to the rigors of shipping, but the extra wear and tear that rental equipment always takes. And if a Leasametric machine breaks down, so does the cash flow it generates.

So before Leasametric approves one unit, they tear it apart piece by piece. And give it an evaluation that makes an MIT exam seem easy by comparison. We talked to Susan recently, and these are just a few of the things she said:

"Too many terminals just don't measure up... I've seen machines with questionable ergonomics... keyboards that flex in the middle when you type... even cheap little diodes that could drop off... all these factors combine to make a product you either want or don't want in your product line..."

"But with TeleVideo, the whole product is well designed. They start with solid engineering, and follow through with every detail, down to the steel brace in the keyboard. Overall, they've built the same quality into the 9220 that's made all their other terminals last so long. Obviously, we want to make sure that, two years from now, our equipment will still be working for us. That's why we feel so good about TeleVideo."

Of course, Susan is talking about quality and reliability. When you check the features you get for

the money, we look just as good. As you can see from the chart above, the 9220 gives you full VT 220 compatibility. A 14" amber screen. And the best thought-out ergonomics around. All for only \$619.

The TeleVideo 9220. If you'd like more information, or the name of your nearest distributor, call 800-835-3228, Dept. 128. In the meantime, we'd like to leave you with a quote from Susan Kennedy, "Keeping customers happy is what my job is all about. And TeleVideo definitely makes my job a lot easier."



TeleVideo[®]
Settle for more.

9220 KEY FEATURES			
Super dark 14" amber screen (green optional)	✓	30 non-volatile programmable function keys	✓
Full VT 220 compatibility	✓	VT100 compatible keyboard	✓
DB25 connector for printer port	✓	Compose key disable control	✓
Tilt and swivel base	✓	Graphics model available	✓

TeleVideo Systems, Inc., 1170 Morse Avenue, Sunnyvale, CA 94088-3568, (408) 745-7760
Regional Offices: West (408) 745-7760, Southwest (714) 476-0244, South Central (214) 550-1060
Southeast (404) 447-1231, Midwest (312) 397-5400, East (516) 496-4777, Northeast (617) 890-3282.
Amsterdam: 31.2503.35444, Paris: 33.1.4687.34.40, London: 44.9905.6464

INTRODUCING

WARP

CCA'S NEW WARP TEN BREAKS THE DOS BACKLOG BARRIER.

Attack your DOS backlog at warp speed. Tremendously productive power can now be integrated into your DOS shop at a tremendously low cost.

It's Computer Corporation of America's new WARP TEN program. An applications development system that will at least quadruple the speed with which you can respond to your users' needs.

And, it costs significantly less than more expensive software packages that are a lot less powerful. In fact, CCA's

WARP TEN is going to change applications development programmers' entire perception of just what they can do under DOS.

With WARP TEN, you can be developing applications while the system is also managing production processing.

WARP TEN will run under CICS, but will also perform as a powerful stand-alone system. So processing time is decreased and system resources are saved for added capacity. And its truly fourth generation language means programmers spend time creating solutions. Not recreating drudge work.

At CCA, we're so confident that WARP TEN answers your need to increase productivity and cut through your backlog that we have an offer that doesn't cost you a thing, except a little time.

Call us, and we'll send a technical representative to install the WARP TEN right in your office. Then the entire day is yours to spend watching our representative actually build an application on your system.

You'll invest a day. But the payoff can be free weekends, with a disappearing programming backlog. Because nothing on the market approaches the productivity of WARP TEN, or the price.

Experience ultimate DOS power that can break through the backlog barrier. WARP TEN from CCA. Call 1-800-DOS-WARP and ask for the "DOS Shop." Or, write John Donnelly, V.P. Marketing, Computer Corporation of America, Four Cambridge Center, Cambridge, MA 02142.

Computer Corporation of America



A Crowntek Company

NEW PRODUCTS/COMMUNICATIONS

Continued from page 122

\$1,495. With a second, statistically multiplexed, independent printer channel, it costs \$1,695.

Data Race, 5839 Sebastian Place, San Antonio, Texas 78249.

Local-area networks

The Destek Group has announced a local-area network configuration for the AT&T 6300 series of microcomputers.

The configuration uses a media access protocol with a network bus speed of 2M bit/sec. According to the vendor, the Destek network continues to function even if one node on the network fails.

The product is said to be IBM Netbios compatible.

Individual node prices range from \$500 to \$700 depending on bus configuration, quantity and software.

The Destek Group, 830 E. Evelyn Ave., Sunnyvale, Calif. 94086.

Network services

Western Digital Corp.'s Enhanced Peripherals Division has announced the Dialcard25, a CCITT X.25 personal computer circuit board with GTE Telenet Communications Corp. PC X.25 software, for use on GTE's dial-up synchronous service.

Dialcard25 allows users of personal computers to utilize the X.25 dial service and communicate synchronously over the Telenet public data network.

Features include automatic end-to-end error detection and retransmission, rates up to 4.8K bit/sec. and the ability to perform multiple tasks simultaneously.

Dialcard25 is priced at \$595.

Western Digital, 2445 McCabe Way, Irvine, Calif. 92714.

Test equipment

Datacomm Management Sciences, Inc. has introduced the Network Service Manager (NSM), a performance management system.

NSM can monitor up to 1,024 circuits simultaneously. It provides measurements for response time, bit-to-poll delay, processing time, primary and secondary text time, primary and secondary text counts, error counts, line utilization and line availability.

Other features include bidirectional application monitoring, real-time alarms and network segmentation. All protocols, such as 3270 Binary Synchronous Communications and IBM 3270 Synchronous Data Link Control/Systems Network Architecture, are applicable at speeds up to 19.2K bit/sec.

System prices range from \$1,200 to \$3,000 per circuit.

Datacomm Management Sciences, 25 Van Zant St., E. Norwalk, Conn. 06855.

Computer Systems Associates, Inc. has introduced the Sea-1 static emulator/analyzer.

The Sea-1 is a test instrument said to plug into any microprocessor socket or system bus connector. The logical state of all lines is displayed by individual LEDs.

The Sea-1 is priced at \$3,785.

Computer Systems Associates, 7564 Trade St., San Diego, Calif. 92121.

Communication Devices, Inc. has announced the Leased Line Modem Error Reporting System.

The Leased Line Modem Error Reporting System is said to continually monitor the signal quality and data carrier detect leads of up to 32 modems and report malfunctions to a printer.

Error messages contain information on the carrier, the circuit identification number, line destination, time and data as well as the type and duration of each error.

According to the vendor, the system is modem-vendor independent.

Leased Line Modem Error Reporting Systems are available in groups of eight lines.

Prices start at \$1,500.

Communication Devices, 1 Forstmann Court, Botany Village, Clifton, N.J. 07011.

SYSTEMS & PERIPHERALS

Data storage

Plexus Computers, Inc. has announced an expansion module said to boost disk storage and tape backup speed for the company's Unix-based P/60 computer system.

In its minimum configuration, the expansion module includes either one 9-in. hard disk or the Group Coded Recording tape drive. The maximum configuration includes two 9-in. hard disks and the tape drive.

According to the vendor, the module allows on-line disk storage of the P/60 to be expanded up to 2G bytes. The tape drive can write 180M bytes on a standard 2,400-ft reel in fewer than 20 minutes, the vendor claimed.

The expansion module is priced from \$29,000.

Plexus Computers, 3833 N. First St., San Jose, Calif. 95134.

Sigma Information Systems has announced the SA-H155, a 12¼-in.-high ruggedized industrial system enclosure with mounting for three removable media drives.

The SA-H155 includes a 480W switching power supply. Three 5¼-in. Winchester drives are located at the right front of the unit. It incorporates a 14-slot Q-bus backplane that can be used with either Digital Equipment Corp.'s LSI-11 series or Microvax systems.

The SA-H155 is priced at \$4,500.

Sigma, 3401 E. La Palma Ave., Anaheim, Calif. 92806.

How to advertise in every major computer market in the world as easily as you advertise in the U.S.

CW INTERNATIONAL Marketing Services will help you penetrate the most profitable computer markets worldwide — easily, effectively, and economically.

Your ads will receive the attention they deserve. Our network of more than 55 computer publications in over 25 countries is the largest in existence. More than 10,000,000 computer-involved people around the world rely on us for the information they need to stay ahead.

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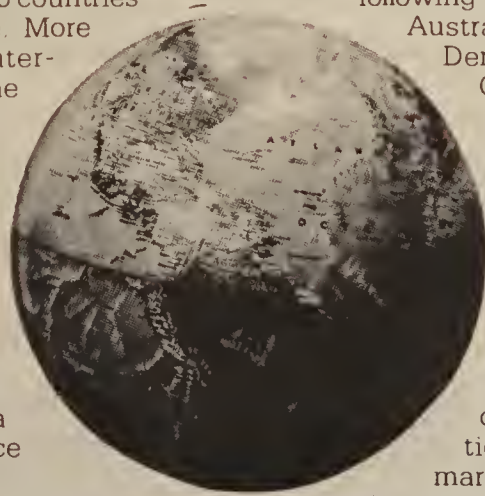
And you'll be able to advertise in even more markets when you take advantage of our corporate discounts.

We're also available to advise you on your campaign strategy — such as when to advertise in order to coincide with special-focus issues and trade shows.

All you need to do is send us your advertising materials. We'll handle all the transactions. And we'll bill you in U.S. dollars so you won't have to worry about exchange rates.

We'll help you increase your market penetration. We have publications in all of the following countries: Argentina, Asia, Australia, Austria, Brazil, Chile, Denmark, Finland, France, Greece, Hungary, India, Israel, Italy, Japan, South Korea, Mexico, Norway, People's Republic of China, Spain, Sweden, Switzerland, The Netherlands, United Kingdom, Venezuela and West Germany.

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NEW PRODUCTS/SYSTEMS & PERIPHERALS

Terminals

Electro Standards Laboratory, Inc. has introduced the **Model 8029 RGB Video ABC Switch**.

The device is said to switch individual red, green and blue signals of the red-green-blue (RGB) coaxial vid-

eo signal simultaneously. The user can switch three RGB computer outputs to one common video monitor or switch one computer output to three video monitors.

According to the vendor, all connections to the color monitors and color computers are made via connec-

tors mounted on the rear panel.

The Model 8029 is priced at \$249.

Electro Standards Laboratory, P.O. Box 9144, Providence, R.I. 02940.

Olympia U.S.A., Inc. has announced its **Olytext 20** screen-based typing system.

The Olytext 20 consists of a 12-in. tiltable screen and detachable keyboard. The system's CPU contains 128K bytes of internal memory, 64K bytes of random-access memory (RAM) and a 64K-byte RAM disk.

According to the vendor, characters are displayed on the screen and errors can be corrected on the screen or on paper.

With a single drive it costs \$1,849; with a dual drive it costs \$2,099.

Olympia U.S.A., Box 22, Somerville, N.J. 08876.

154 dot/in. and 120 dot/in., respectively. Output can be on transparency, cut sheets or roll paper.

Graftel's video processors range in price from \$1,495 to \$3,495.

Graftel, 400 Executive Blvd., Elmsford, N.Y. 10523.

Olympia U.S.A., Inc. has introduced the **ESW 1000**, **ESW 2000** and **ESW 3000K** daisywheel printers.

The ESW 1000 was designed for use with personal computers. It prints 15 char./sec. and has a 2,000-char. buffer. The ESW 2000 is a wide-carriage daisywheel printer. It prints at 25 char./sec. and has a 2,000-char. buffer. The ESW 3000 has a print speed of 40 char./sec. It features a 4,000-char. buffer.

The ESW 1000, ESW 2000 and ESW 3000 cost \$549, \$799 and \$1,699, respectively.

Olympia U.S.A., Box 22, Somerville, N.J. 08876.

Power supplies

Dranetz Technologies, Inc. has announced **Dran-Scan 1 Multipoint Power Line Monitoring System**.

Dran-Scan 1 combines an IBM Personal Computer, a Series 710 data communications multiplexer, up to 64 power-line disturbance remote monitor units (RMU) and a software package into an integrated system for monitoring power quality.

Each RMU measures and stores out-of-limit power-line sags, surges, high and low voltages and impulse transients.

The data communications multiplexer costs \$2,650. The RMUs range from \$1,950 to \$2,950. The central processor costs \$6,500.

Dranetz Technologies, P.O. Box 4019, Edison, N.J. 08818.

Electronic Specialists, Inc. has announced **computer power stabilizers**.

According to the vendor, the stabilizers are suitable for installations having erratic voltage and frequency. Crystal-controlled, 60-Hz, sine-wave power is said to be generated to power 250W and 500W loads. An internal battery provides continuous operation during generator change-over and other downtime situations.

A 250W stabilizer costs \$1,095; a 500W stabilizer costs \$1,495.

Electronic Specialists, 171 S. Main St., Natick, Mass. 01760.

PRICE REDUCTIONS

PC's Limited has announced a price reduction for the **PC's Limited AT**.

The AT includes the system unit with 1,024K bytes of memory on the motherboard, a 1.2M-byte floppy drive, a combined floppy and hard-disk controller card and an IBM Personal Computer AT-style keyboard, according to the vendor.

A 192W power supply, two serials and one parallel port, eight expansion slots and a clock/calendar with battery backup are also included. The unit is keyboard switchable from 6 MHz to 8 MHz.

The PC's Limited AT is now priced at \$1,495.

PC's Limited, Building 3, 1611 Headway Circle, Austin, Texas 78754.

CICS Users:

To increase uptime and control your file availability... Challenge DADS.

Greatly enhances CICS 1.7 allocation capability

- Allocates/deallocates user and transient data files
- Eliminates CICS downtime if files can't be allocated
- Supports all CICS startup options
- Requires no modifications to CICS
- Allocates/deallocates files by groups
- Automatically opens and closes files
- Automatically enables/disables transactions and programs
- Provides security exit and audit trail
- Automatic time-initiated allocation/deallocation
- Batch interface
- O/S core manager

DADS-Productivity Software from STAR

Challenge us!

STAR

Software Technologies and Research, Inc.

160 West Street Cromwell, CT 06416-1930

In CT 203-529-7128 **1-800-258-STAR**

IBM has announced that its **3290 Information Panel Model T30** has been Tempest tested and accredited.

The 3290 Model T30 is a slim-profile display station said to display up to 9,920 characters. It provides a data/typewriter keyboard with an integrated numeric keypad, which is similar to the Model 230 keyboard but not customer modifiable.

The 3290 Information Panel Model T30 costs \$9,300 including keyboard and 6-ft power cable. Annual minimum maintenance charges are \$360.

IBM, 44 S. Broadway, White Plains, N.Y. 10601.

Printers/Plotters

Graftel, Inc. has announced that its **VP200** and **VP210** color video processors now support Tektronix, Inc.'s 4690 series of color ink-jet printers.

The processors provide 8- and 64-color capability, respectively. The 4692 and 4696 Tektronix printers utilize yellow, magenta, cyan and black inks and drop-on-demand technology. They provide print output at

VIEWCOM

Automatic Report Management And Distribution System

VIEWCOM ONLINE REPORT DISTRIBUTION SYSTEM

MULTI FUNCTION MENU

S	ID	QATE	TIME	LINES	PAGE	FORM	CPY	RTE	DESCRIPTION
001	FROM NYC-001	12:00	000007	0001	STND	01			BACK DROERS UPDATE
PK	001	01/07/86	14:05	000013	0004	STND	01	01	GENERAL LEDGER
002	03/08/86	07:24	000014	0014	STND	01	00		ACCT PAYABLE
V	003	04/13/86	04:37	000023	0026	STND	00	01	CHECK REGISTER
004	07/18/86	07:48	000035	0031	STND	01	00		EMPLOYEE UPDATE
P	005	08/08/86	08:28	000043	0037	STND	01	00	STOCK HOLDINGS
E	001	FROM NYC-003	14:05	000056	0051	STND	01		BENEFITS REPORTS

V=>VIEW P=>PRINT PK=>PRINT+KEEP PD=>PRINT+OPTIONS R=>ROUTE
 OPID=> ALL ROUTE TO: E=>ERASE
 START PAGE. PAGES: KEEP AFTER PRINT Y/N: PRINT ALL THIS FORM Y/N:
 PRINTER IO OVERRIDE
 PF8=>SCROLL FWD PF7=>SCROLL BWD PF3=>QUIT PF2=>UTILITY
 CLEAR=>REFRESH

- Multi-Function Menu Gets You There Faster
- On-Line Report Viewing Saves Paper
- PC Support Puts PCs To Work
- Automatic Routing Speeds Report Distribution

Without
VIEWCOM

SAVE
75%

With
VIEWCOM

VIEWCOM ONLINE REPORT DISTRIBUTION SYSTEM

UTILITY MENU

1->UTILITY=>

F=>DISPLAY/ALTER FORMS ON PRINTERS M=>MODIFY ACTIVE PRINTER
 B=>ROUTE REPORT TO BATCH OR RJE P=>PURGE REPORTS BY AGE
 A=>ALIGNMENT FORMS PATTERN GENERATION C=>DISPLAY FORMS CONTROL IMAGE
 R=>ROUTE REPORT TO ANOTHER REGION

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FORMS IO:	PRINTER FUNCTION:	PAGES:
PRINTER ID:	B=>BACK SPACE	F=>FORWARD SPACE
REPORT ID:	S=>STOP AFTER PRINTING	H=>HALT IMMEDIATE
	OPID:	OUTPUT CLASS:
		RJE STATION IO:
		REGION NAME:

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COMPUTER INDUSTRY

Section begins on page 164

Word Perfect raising profile without turning back on users

Popular software has low-key firm riding high

By Peggy Watt

OREM, Utah — As low-key Word Perfect Corp. aims for a higher corporate profile for its popular micro-computer word processing program, it is also trying to keep its small-town values. From its headquarters, just a few miles from its cofounders' alma mater, Brigham Young University, the company says it believes it accommodates its users to a degree that other, battle-worn veterans have abandoned.

Wordperfect software has never been copy-protected, which the company attributes simply to a quiet vote of faith in honesty. "It's an amazing thing about the American public," says cofounder and President Bruce Bastian. "If you force them to be honest, they won't have it."

But good intentions are only a start — building a higher profile means new promotional territory. Word Perfect, formerly Satellite Software International, took a big step recently with its first full-page advertisements in *The Wall Street Journal* and *USA Today*.

A higher profile is not just advisable, it is necessary, says Bob Lefkowitz, vice-president of soft-

ware research for Infocorp, a Cupertino, Calif., market research firm.

"Word Perfect has a hit product, and they're riding its trail," he says. "But a low-key approach will limit them in the long run. The name of the game in personal computer software is still marketing. There are only so many features you can add."

The company recognizes that benefit, even if it is still getting used to the methods of establishing a higher profile. "We do marketing because we have to get the news out," says W. E. Peterson, executive vice-president. "We introduce

a product without too much fanfare, let it develop its following, listen to the people who use it and let it evolve."

Wordperfect corporate users include Upjohn Corp., which recently bought 2,000 copies, Ford Motor Co. and several aerospace companies and defense contractors. A deciding factor was the liberal site-licensing policy, MIS managers report.

Word Perfect's licensing plan is essentially a volume purchase agreement that allows users to upgrade

their copies without returning diskettes, make their documentation and move copies among machines.

Word Perfect appears to be listening to its newest audience. It invited a dozen corporate MIS managers to an informal advisory board last Jan-

uary and asked for a wish list of features. Among the expected changes are easier document sharing with the addition of a standard format line; accommodation of graphics, like a spreadsheet graph; and several modes to allow users to cope with more advanced features as they become more proficient.

Word Perfect's responsiveness ensures a rosy future for its new ventures, says Jeff Tarter, analyst and editor of "Softletter," an industry newsletter based in Cambridge, Mass.

"They've really started to make some inroads," Tarter says. "Theirs is a classic case of how the market is product driven. They've worked very hard at enhancing the product and paying attention to what users want. Everybody pays lip service to that, but these guys really went out and did it."

The firm also showed its focus by recently changing its name from the ambiguous Satellite Software to the moniker of its premier product. "We tried for years and years to build some recognition," Peterson says. "But it was the product name that customers recognized, so the company switched." Also, employees were tired of fielding daily requests for satellite dish prices, adds Dan Lunt, vice-president of marketing.

The new name stresses commitment to word processing, despite the recent release of many adjunct products. "Our goal is not to become a Microsoft Corp.," Bastian says. "We are a word processing company, but we can react to other needs as well."

As the market changes, so does the competition, Word Perfect executives say. Though Multimate International Corp.'s Multimate, now owned by Ashton-Tate, has been the primary rival product, new competitors are surfacing.

Lunt names the IBM Displaywriter because of its cross-system use. Others mention Microsoft Word, because of that company's firm push into the corporate market. But Word Perfect officials say they're not worried about Wordstar from Micropro International Corp. "I think Multimate and Wordstar have peaked," Peterson says.

See WORD page 132

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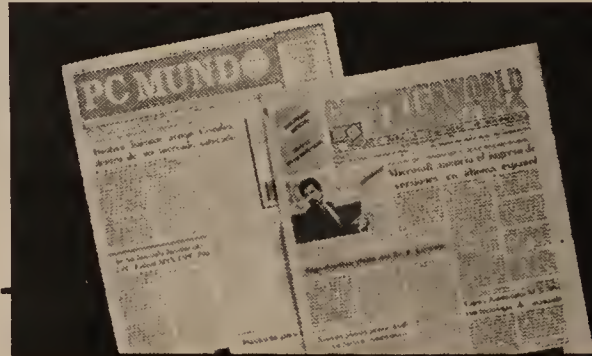


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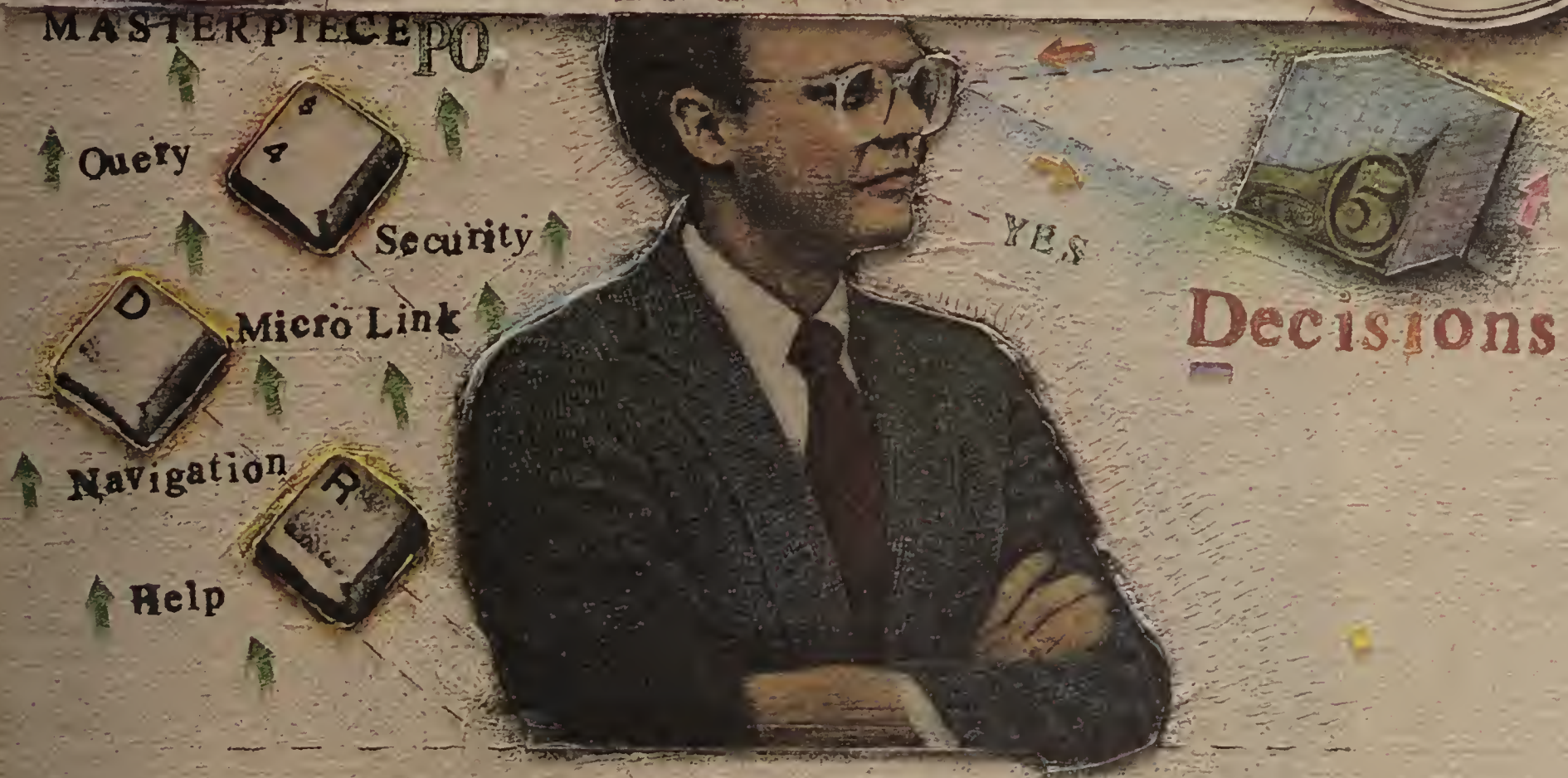
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COMPUTER INDUSTRY

Expecting strong quarter, Businessland calls off merger

Sought changes in acquisition terms

By Maura McEnaney

SAN JOSE, Calif. — In apparent pursuit of more favorable acquisition terms, computer retail chain Businessland, Inc. last week called off a proposed merger

with MBI, Inc. of Rockville, Md.

Sources said the merger was halted after Businessland sought to change the terms of the acquisition in anticipation of strong fourth-quarter financial results.

Under the preliminary merger terms, sources said, Businessland planned to exchange 1½ shares of stock

for each share of MBI stock, a deal valued at about \$75 million.

Speculatively, the restructured deal reduced the exchange to approximately 1¼ shares for each MBI share.

"I guess Businessland decided it should be more in their favor," said Paul Evans, an analyst at Warburg, Rowe & Pitman Akroyd, Inc.

"My sense is that Businessland's current quarter is probably quite strong."

Announced in mid-April, the merger would have paired two of the country's largest computer store chains and added 36 stores and \$118 million in sales to Businessland's holdings.

Businessland also announced in April plans to ac-

quire the 36-store Ameri-source chain in Kansas City.

News of the aborted merger reminded some analysts of the failed merger between 3Com Corp. and Convergent Technologies, Inc. [CW, March 31].

"It is the same thing, except it didn't happen the day before the shareholders' meeting," Evans said.

Word Perfect raising profile

From page 130

Word processing companies are battling in a large but limited market, says William Coggshall, executive vice-president of the market research firm Market Access International, Inc. of Mountain View, Calif.

"About two-thirds of the users have word processing programs, and I don't see that rising," Coggshall says. "I'd expect only average, modest growth for word processing."

Word Perfect executives, however, say they will keep growing by porting Wordperfect to new systems; a version for Digital Equipment Corp.'s Microvax is expected at Comdex/Fall '86.

In some ways, Word Perfect's six-year history is a typical startup-to-success story. Bastian joined his Brigham Young computer science professor, Alan Ashton, in months of feverish programming to design their flagship product. The original workroom was a closet, and the desk was a door laid across two IBM Personal Computer packaging cartons, Ashton recalls. During the code-writing, Ashton was still teaching full time.

Word Perfect's work force has doubled yearly to its current level of 250, and all who joined when the company released its MS-DOS version in November 1982 are still there, Peterson says. Revenues have also doubled or more every year.

The company is still privately held and has no plans for a public stock offering. "We can't see the advantage in it," Lunt says.

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COMPUTER INDUSTRY

Sperry's Japan unit says takeover will not mean change

Says users won't be inconvenienced

By Takehisa Kondoh
Computerworld News Service

TOKYO — Nippon Univac Kaisha, Ltd. (NUK), partly owned by Sperry Corp., has reassured Japanese Sperry users that Burroughs Corp.'s

takeover will not mean "the slightest change" in its products and services. Sperry, which owns 34.2% of NUK, agreed to be acquired by Burroughs May 27 for \$4.44 billion.

NUK Chairman Teruo Sawachi said the "product lines of Sperry and Burroughs can coexist, and both firms' operating systems will

remain intact."

Japanese Sperry users will not be inconvenienced, he said. Sawachi, however, would not say whether his firm will take specific steps to protect its Sperry customers.

Owned by three others

NUK, capitalized at \$21.8 million, is also owned by Mit-

sui & Co., a trading house, and two Japanese mainframe makers, Mitsubishi Electric Corp. and Oki Electric Industry Co.

A large number of NUK's customers are in the securities industry, to which the firm supplies a range of Sperry hardware and software, including the 1100 mainframe series.

Yuji Ogino, director of International Data Corp. (IDC) Japan Ltd., said the takeover will speed the shift of Japanese Sperry users to competitors' equipment.

Rumors about the purchase, he said, "already deprived NUK of many mainframe users. The anxiety of the remaining users is now amplified."

'Healthy competition'

Meanwhile, some insiders in the Japanese computer industry, including Fujitsu Ltd. Managing Director Rinzo Iwai, hailed Burroughs' takeover and said that the combined organization was "a

”

'Product lines of Sperry and Burroughs can coexist, and both firms' operating systems will remain intact.'

— Teruo Sawachi
Nippon Univac Kaisha, Ltd.

step to bring healthy competition to the worldwide computer market dominated by IBM."

IDC-Japan's Ogino and other Japanese computer experts doubt NUK will be merged into Burroughs' Japanese subsidiary, however. There are wide gaps in the strategies the two companies have for the Japanese market, according to Ogino and other Japanese computer experts.

Since establishing NUK in 1958, Sperry has used a multidirectional strategy in Japan, tying in with various vendors including Oki, Mitsubishi and Mitsui.

Most recently, Sperry proposed a technical and procurement agreement for semiconductors and disk storage systems with Hitachi Ltd.

Burroughs, meanwhile, has controlled its market presence in Japan only through Burroughs-Japan. "This difference of market strategy is too substantial for the two Japanese subsidiaries to mesh with each other easily," one industry analyst said.



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SEE PAGE
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COMPUTER INDUSTRY

Can a shotgun wedding work?

From page 164

tions, pooled resources and combined research and development of Burroughs and its new wholly owned subsidiary, critical mass is only a means to an end. Only one group can answer the question, Will it work? It's the users.

In the large-scale mainframe MIS world, IBM is a factor in virtually every purchase decision made. Although the "no one ever got fired for buying IBM" mentality has thankfully dissipated somewhat, the fact remains that non-IBM vendors must provide customers with a solid reason not to buy IBM.

The MIS director may be bowled over by the price/performance of a Sperry or DEC or Tandem Computers, Inc. system, but he still has to convince more conservative higher-ups to stray from the Big Blue nest.

Right now, a lot of users don't see that solid reason in Burroughs-Sperry. Sperry users have said openly in the trade press that they're concerned about the future of Sperry architecture. If they don't like what

Computer Industry section begins on page 164.

they hear, they may turn to IBM, which will be more than willing to lend a sympathetic ear and a 3080 leasing contract.

Burroughs-Sperry management has a lot of reassuring to do. Sperry must overcome its lukewarm reaction to the takeover and convince its users that product lines and migration paths will be preserved.

Sperry must do so in a better fashion than the indirect way it informed customers of the operating system license fees for third-party channel buyers that it instituted earlier this year. The firm is reportedly sending a letter to its largest customers explaining the takeover situation — a good sign. For Burroughs, the year-long effort for the computer merger deal of the century can't stop here. Blumenthal may be the conqueror, but his will be a Pyrrhic victory if users decide bigger is not better.

It may, of course, be at least 18 months before the jury of collective MIS purchase decisions returns its verdict on the merger. The management of this yet-to-be-named \$10 billion vendor gave itself quite a challenge in three weeks of sometimes acrimonious takeover talks by building up skepticism among its users.

Overcoming that challenge may prove even harder than executing a successful tender offer.

Every stock market investor should be as fortunate as IBM. Big Blue decided to play the market recently, authorizing the buyback of up to \$1.5 billion worth of its shares when they were trading at the sluggish level of \$147.

So what happens? That very announcement triggers a surge of more than four points in IBM stock the very next day, which in turn propels the Dow Jones Industrial Average up 25 points to a record high. Playing the market is a snap when you have that kind of clout.

CBEMA: Trade bill news mixed

From page 164

Taiwan and West Germany.

CBEMA officials said the provision, sponsored by Rep. Richard A. Gephardt (D-Mo.), is protectionist and invites retaliation against U.S. exports.

On the other hand, Maxwell said, several other provisions would be beneficial to the industry, including the measure to open foreign markets to U.S. telecommunications products and services.

The Trade and International Economic Policy Reform Act of 1986, which awaits Senate action later this year before it becomes law, was de-

signed to fight "unfair" foreign import practices. It was also designed to improve the climate for U.S. exports in hopes of reducing the U.S. trade deficit.

Trade deficit worsened

The U.S. trade deficit in telecommunications equipment worsened during the first quarter of 1986 by 30.3% to a deficit of \$402 million, according to CBEMA's latest statistics. Exports declined 8.3% as imports increased by 13.3%.

"The increasing negative balance is far more a reflection of foreign trade barriers to U.S. telecommunications products than it is on the industry's competitiveness," commented Vico Henriques, who is CBEMA's president.

"It is no accident that telecommunications equipment trade with

the Far East showed the greatest deficit," he continued.

"CBEMA and the U.S. industry will continue to insist upon open markets abroad in all of the upcoming trade negotiations," Henriques said in a statement.

First-quarter decrease

The latest trade figures for the computer and business equipment industry showed that sector's positive trade balance decreased by 7.9% in the first quarter of 1986 to \$1.281 billion, CBEMA reported.

Exports declined by 9.5% and imports declined by 10.1%, reversing the pattern of import and export increases in 1985, Henriques said.

The computer industry has maintained a positive trade balance with all world regions except the Far East, CBEMA noted.

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The collage features several covers of **COMPUTERWORLD** magazine. The top cover is dated July 8, 1985, and has the headline "Users divided on System/38 bug complaint". Other visible headlines include "Reagan direct", "Technology's expanding horizons", "Big brother is coming", "AT&T will work harder than ever", "Users, vendors facing up to break-in", "Agencies' hacker troubles blamed on bulletin board", and "Product features effort to enhance security". A magnifying glass is positioned over a circuit board, symbolizing the focus on technology and security.

COMPUTER INDUSTRY

Major Japanese vendors report first profit setbacks in years

Semiconductor slump, weak yen responsible

By Yasuko Yoshimi
and Takehisa Kondoh
Computerworld News Service

TOKYO — Several major Japanese electronics vendors recently issued annual financial reports showing the first setback in profits that those companies have experienced in years.

Only the computer manufacturing divisions of those firms were able to post positive revenue growth, the financial reports showed.

The cause of trouble for the Japa-

nese electronics industry appears to be the increasing strength of the Japanese yen against the U.S. dollar and the continued recession in the worldwide semiconductor market.

Hitachi financials

Among those that issued weak financial statements for the 1985 fiscal year was Hitachi Ltd., Japan's largest electronics supplier. Hitachi suffered its first year-to-year decline in revenue in 10 years, while its profits dropped for the first time in 11 years.

At Toshiba Ltd. and Mitsubishi Electronics Corp., sales and profits eroded sharply. Toshiba's revenue recorded its first year-to-year drop in 20 years, while Mitsubishi suffered

its first yearly sales setback in 10 years.

Hitachi and Toshiba reported year-to-year revenue declines of \$165.7 million and \$118.3 million, respectively, and each maintained those drops stemmed from foreign exchange fluctuations. Fujitsu Ltd. blamed the semiconductor recession for its more than 67% profit decline.

Some of the firms that issued overall weak fiscal reports, however, showed double-digit growth in computer sales. Industry leader Fujitsu became the first Japanese firm with annual computer system revenue of more than \$6 billion. Fujitsu, NEC Corp. and IBM Japan, Japan's three largest computer firms, showed an

average 19.8% systems sales growth over the previous year.

In other Japanese financial news, all six of Japan's largest semiconductor manufacturers have curtailed 1986 investment spending. The Japanese chip makers announced a 30% cut in aggregate investment, which this year will total \$1.83 billion.

The six — NEC, Hitachi, Toshiba, Fujitsu, Matsushita Electronics Corp. and Mitsubishi — cut back their investments in 1985 by 38.3% to \$2.6 billion.

Investment reductions

Semiconductor investment reductions were deepest at Mitsubishi, which plans a 43% cut to \$194 million. NEC will spend \$411 million, down 30%; Hitachi, \$353 million, down 33.3%; Fujitsu, \$200 million, down 29.2%; and Matsushita, \$235 million, down 33.3%.

Toshiba, which leads the Japanese effort to develop the next generation of semiconductors, minimized its investment cuts to 16.7%, or \$441 million.

Last December, Toshiba became the first Japanese chip vendor to enter volume production of 1M-bit dynamic random-access memory chips.

Despite the investment cuts, domestic chip-manufacturing observers foresee a sharp production recovery this year. They estimate production by the six vendors will grow by an average 17.2% to \$12.37 billion.

Echoing this outlook, the Ministry of International Trade and Industry recently reported Japan's semiconductor productivity has turned the corner and posted 2.8% growth in March.

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See page 139

COMPUTERWORLD

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Convergent sees 2nd-quarter losses

SAN JOSE, Calif. — Two months after its failed merger with 3Com Corp., Convergent Technologies, Inc. is anticipating second-quarter losses because of declining OEM business with AT&T Information Systems.

Convergent President Paul Ely told shareholders recently that shipments to AT&T dropped 30% in the quarter. The company expects sales of its Unix-based Personal Computer to AT&T will drop to no more than \$30 million in the second half of the year, from about \$60 million in the first and second quarters.

"Nobody is going to be making any money anytime soon," said Bruce Lupatkin of Hambrecht & Quist, Inc. in San Francisco. Analysts are also waiting to see what impact the merger of Burroughs Corp. and Sperry Corp. will have on Convergent's OEM business, since Burroughs is currently a large Convergent customer.

Ely told shareholders Convergent's large cash reserves will be used to acquire a number of companies producing turnkey systems in vertical markets. It is expected the first of those acquisitions will be Baron Data Systems. Convergent currently owns 40% of Baron Data, an Oakland, Calif., systems integrator in the legal and medical markets.

— Maura McEnaney

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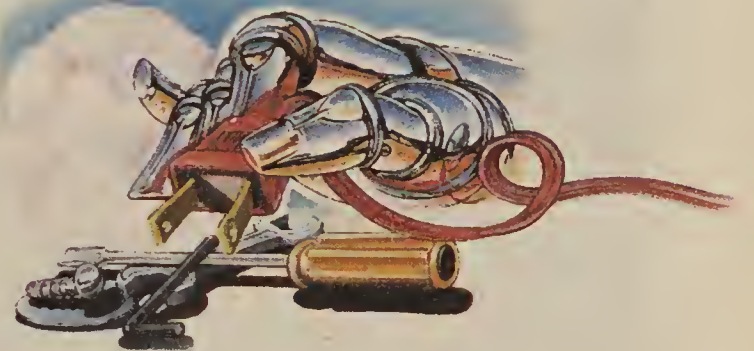


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COMPUTER INDUSTRY

Computer lessors enter hot telecommunications market

Comdisco finds strong digital PBX demand

By Alan Alper

In an attempt to counteract ebbing growth rates in the bread-and-butter mainframe and peripherals portions of their businesses, computer leasing firms are diversifying their portfolios by adding telecommunications products.

And with good reason.

According to the American Association of Equipment Lessors (AAEL), telecommunications is the fastest growing category in the leasing business. The AAEL estimated that leasing of telecommunications equipment, including telephone switches and voice/data private branch exchanges (PBX), grew from \$3.4 billion in 1983, constituting 5.7% of the \$61.2 billion business equipment leasing industry, to \$8.8 billion in 1984, or 11% of the \$80.8 billion total market.

Although figures for 1985 are not expected to be available until later this month, an AAEL spokeswoman said growth in the telecommunications leasing portion of the business continues apace. "The telecom area is continuing to grow, and leasing usually follows growing areas of the economy," she said, noting that preliminary 1985 estimates place the total leasing market at \$94 billion.

The market for telecommunications is growing, she said, because of the deregulation that followed the breakup of AT&T in 1984. "It's opened up new markets and demand for new equipment," she added.

Charles Greco, vice-president of financial services at the market research and consulting firm International Data Corp. (IDC), said that since most computer lessors are closely tied to the fortunes of IBM, the industry leader's sluggish performance is dictating the current telecommunications embrace.

"Most of the lessors are IBM junkies," he suggested. "If IBM isn't shipping products, they have to diversify

their portfolio in the event all hell breaks loose. Telecommunications products seem to be the most logical move."

One computer leasing company considered a pioneer in the telecommunications market is Comdisco, Inc. From a standing start two years ago, Comdisco expects to tally between \$150 million and \$200 million in telephone switches this year, up from \$60 million last year, according to Bob Bardagy, senior marketing vice-president.

Bardagy said, given the convergence of computer and communications technology, the leasing of telecommunications gear is a natural extension of what Comdisco has done since it was founded in 1969.

"The guy who is making the decision on a PBX is usually close to the guy making the decision on the computer," Bardagy explained. "With it all being under the auspices of the MIS group, it has become easier for us to lease telecom equipment."

Digital PBXs

Comdisco did not participate in the telephone switch market until the advent of digital PBXs, Bardagy said, because such products better fit the firm's overall leasing strategy. With digital switches, there appears to be guaranteed remarketing value. "If people are moving from location A to B, they might not want to bring their digital PBX, so we'll lease them a new one and remarket the old one," Bardagy noted.

While large lessors such as Comdisco are embracing telecommunications products, many of the smaller companies are taking a cautious approach to the market. "They can't afford the overhead," IDC's Greco maintained.

Tom Martin, president of Computer Financial, Inc., said his leasing company is evaluating offering telecommunications products. "We're trying to understand the residual value before we get in," he said.

The problem, Martin stressed, is that there is not enough market research available to enable lessors to ascertain which vendor will persevere. "This is a new business, and it's... hard to say which vendors will be around in five years and which equipment will have residual value."

To alleviate the possibility of investing assets in equipment with little residual value, some lessors are pricing leases on a zero residual value basis, forcing lease prices to be artificially high, Martin noted.

Another negative factor affecting not just the leasing of telecommunications equipment but the entire leasing industry is the proposed tax reform bill currently winding its way through the U.S. Congress. As currently written, the tax overhaul bill would lower depreciation rates on equipment and repeal investment tax credit, changes which most likely would impede investment in new equipment.

The AAEL spokeswoman said that despite the anticipated tax code changes, leasing will remain a popular way for companies to keep pace with technological change. "That's even more true in the telecommunications area where technology is changing rapidly," she said. "Leasing is a hedge against obsolescence."



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Originally designed to emulate the WANG word processor, MultiMate is often referred to as the corporate word processor. It offers sophisticated networking capabilities, and, with two free-for-a-limited-time software programs (GraphLink and On-File), also has built in graphics and database.

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With a mouse and a graphics card, MicroSoft Word lets you move words around without touching the keyboard, and see what you got without squinting. Without a mouse or a graphics card it's still a powerful word-processor, with "Style Sheets" that simplify formatting, and a built-in outline program.

WordPerfect 4.1\$239
We have a friend who writes for computer magazines. At one time or another he has used and reviewed virtually every major word processor. He now swears by WordPerfect and swears at all the others. Use this program for a while and you'll be able to touch type most of your commands with your eyes closed and your right hand tied behind your back.

WordStar 2000 Plus Release 2\$285
WordStar has had some trouble shedding its image as the lumbering dinosaur of the microcomputer age. But hundreds of thousands of people use it. There are a lot of programs out there to back it up. And this new version gives it the same advanced features as any top-quality word processor. Even the control keys are starting to make some sense.

Volkswriter 3.0\$147
Solid performance with a reasonable price continues to be Volkswriter's claim to fame. It's fast, and boasts one of the original what-you-see-is-what-you-get screens. With the new version's spell checker and more sophisticated print formatting, it is now able to compete functionally with the other high-end word processors. (Our new low price is pretty persuasive too).

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We've got a problem. The prices we're able to offer on Bernoulli boxes are changing about 10 times faster than we can change this ad. Probably because the machines are selling about 10 times faster than anyone ever dreamed they would. The 20 Meg and 40 Meg versions feature two 1/2 height drives with removable cartridges. There's a 90 day warranty, and we're an authorized Bernoulli service center—turn-around on repairs is usually 24 hours. Here are our latest up-to-date-but-probably-obsolete-by-now prices!

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Additional 20 Meg Cartridges\$69
Bernoulli Box 20 Meg\$1999
Additional 10 Meg cartridges\$51
Bernoulli Care Kit\$79

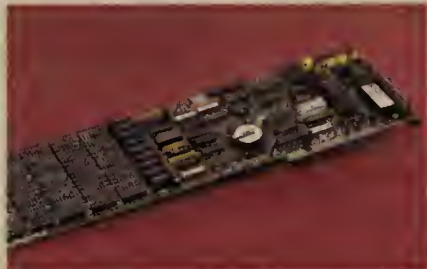
Supercalc ifragilistic!



SuperCalc 3 is the kind of product that you'd be proud to bring home to your mother. Like Lotus 1-2-3 it offers spreadsheet, information management and presentation graphics. But it only needs 128k of RAM, and is not copy-protected. It also is compatible with the Hercules Monochrome Card, as well as the Enhanced Memory (EMS) and Enhanced Graphics (EGA) standards. And you get a free copy of Sideways, the program that lets your printer think horizontal is vertical.

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SixPakPlus Minus\$!



AST is so wrapped up in Enhanced Memory and other arcane subjects that they've been letting the price slip on their original claim to fame—the AST SixPakPlus, one of the original and best multifunction cards. So if you're just starting in computing, or outfitting a second unit for home, now's a great time to buy this basic piece of hardware. You get a clock calendar, serial port, parallel port, up to 384k of memory, and copies of two classic unprotected programs—Sidekick 1.5 and DESQView. A genuine deal.

SixPakPlus 64k\$169
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Herculean rebate!

The Hercules monochrome graphics card has saved hundreds of thousands of PC owners from terminal myopia, by supplying crisp clean monochrome graphics. The Hercules color card is the industry standard for color graphics. Both come with a parallel printer port, and a *full two year warranty*. And from May 1 through August 31, Hercules is offering a \$50 rebate on either card.

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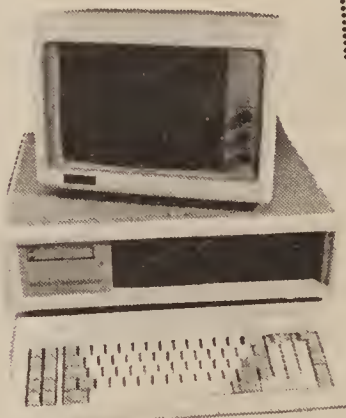
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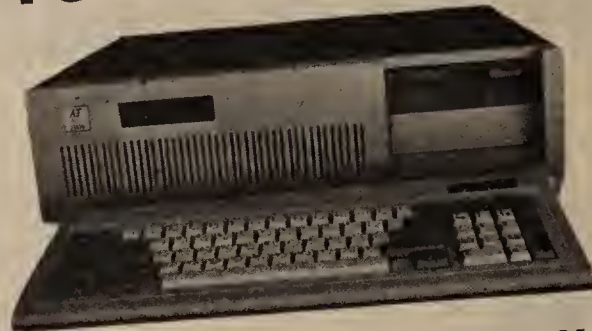
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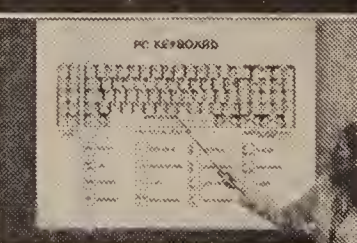
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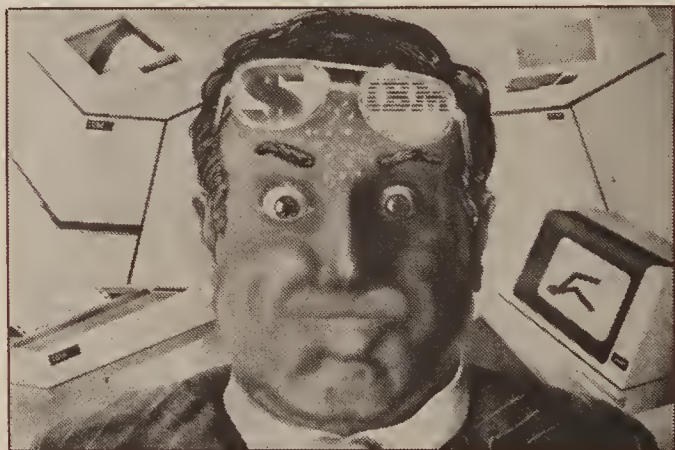


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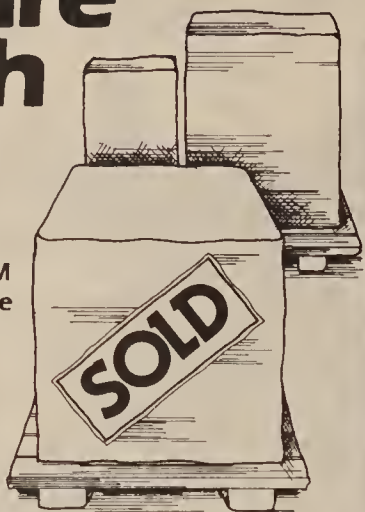
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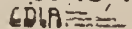
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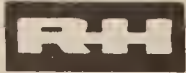
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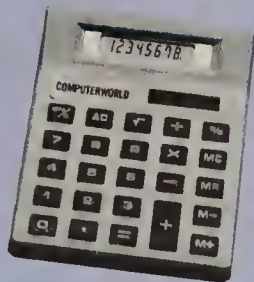
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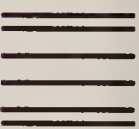
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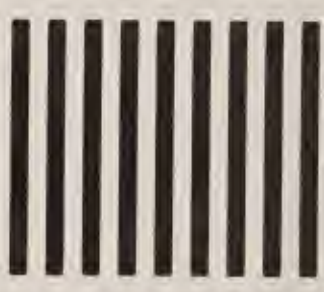
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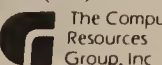
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Software Engineer/Team Leader (361-06) Major aerospace firm offers the challenge of project leadership on a real-time development project. Utilize your microprocessor or minicomputer real-time systems design and development with C, PASCAL and ASSEMBLER. Southern California. To \$52,000.

Senior Systems Analyst — IMS DB/DC Development (361-07) This top aerospace organization in Southern California offers an outstanding benefits package which includes Christmas week holiday. Work with on-line data base applications exclusively. Position requires manufacturing or financial applications experience in an IBM mainframe environment using IMS DB/DC. To \$46,000.

IBM Programmer/Analyst — IDMS Training (361-11) Leading Orange County Fortune 500 company offers excellent training and a pleasant, modern working environment. Two years of OS COBOL experience required with exposure to on-line/data base applications. To \$40,000.

Senior Business Systems Analyst (361-12) International corporation, with headquarters in Orange County seeks a Project Leader with IBM 30XX OS/MVS experience. Will recommend accounting software packages or design custom systems. IMS DB/DC preferred. To \$47,000.

Hogan Specialists — All Levels (351-01) Progressive suburban Los Angeles financial institution seeks junior to senior level HOGAN specialists. IBM mainframe environment offers a variety of career opportunities. To \$40,000.

Senior Data Base Analyst — IDMS Development (351-02) Opportunity to join state-of-the-art data center. Seek professional with three years data base analysis experience to provide applications. Suburban Los Angeles location. To \$50,000.

Major System Development — Multiple Openings (351-03) Highly successful suburban Los Angeles based organization is undertaking major new system development projects. Programmer/Analyst openings in data base mainframe applications, system software, micro-computer product development. Project leader positions available. To \$50,000.

CAD/CAM Programmer/Analyst (351-13) Southern California manufacturer seeks individual with CAD/CAM experience for a major new development. To \$35,000.

Software Engineer (351-16) High technology software firm located in Los Angeles seeks Software Engineer with three years of compiler development experience in C/UNIX. BSEE or BSCS. To \$50,000.

Programmer/Analysts — Major System Development (351-18) Multiple Openings. Successful suburban Los Angeles based organization is undertaking major new system development projects. New Programmer/Analyst openings in data base mainframe applications, system software, micro-computer product development and multiple project leader positions. To \$50,000.

Senior EDP Audit — Extensive In-House Training in Auditing Techniques and Advanced Computing (351-19) Fortune 500 organization headquartered in Southern California seeks a Senior EDP Auditor with experience in designing accounting applications in an IBM/OS environment. To \$42,000.

Consultants — Big 8 Prestige (351-20) Los Angeles based practice of major Big-8 firm is committed to significant expansion. Excellent opportunities for senior-level professionals with background in manufacturing, financial or administrative systems. To \$50,000.

FOCUS Programmer/Analyst (351-21) Southern California Fortune 500 company offers a highly visible position for a FOCUS Programmer/Analyst to work in an information center environment. You will support various user groups and develop applications to meet their needs. To \$38,000.

UNIX Systems Programmer (351-23) Santa Monica based employer engaged in development of hardware/software products, seeks experienced UNIX Internals Systems Programmer to support and enhance software. To \$50,000.

Department Leader — MVS (351-25) Prominent financial services firm seeks a professional experienced in MVS systems programming. Will lead installation of MVS and provide technical leadership to department. Attractive new quarters near popular Southern California beach community. To \$50,000.

NORTHERN CALIFORNIA

UNIX Systems Programmer (341-01) Major San Francisco Bay Area vendor is seeking UNIX Development Engineers. Requires kernel knowledge in Berkeley and AT&T UNIX for this highly visible position. To \$55,000.

DoD Contracts Awarded — Silicon Valley (341-02) Positions available in Program Management, Satellite control, mission planning configuration management, digital signal processing and test and integration. Skills needed are ADA, JOVIAL/73, PASCAL or FORTRAN to be used in a state-of-the-art development environment. To \$70,000.

Software Engineers — Project Leaders (341-03) Utilize your experience in Digital Signal Processing or high speed image processing to grow with this rapidly expanding supplier of satellite systems. Prefer VAX, UNIX, PASCAL and C. Any EW experience is a plus. San Francisco Bay Area location. To \$50,000.

Software Engineer — Development (341-04) Join this prestigious, highly visible development team with a multinational software manufacturer in developing their next generation of products. In-depth knowledge of IBM MVS operating systems and heavy Assembler experience sought. Silicon Valley. To \$45,000.

Product Marketing Manager — Mini/Micro Computers (341-08) Prestigious nationwide computer vendor in San Jose is looking for an experienced professional to manage the integration of a product from engineering definition through product life cycle and marketing distribution. Experience in marketing a computer product is required. To \$60,000.

Customer Support Systems Engineer (341-09) Dynamic young company located in the San Francisco Bay Area is looking for Systems Engineers to support their Banking and Insurance clients. Three to five years experience in CICS, IMS-DC in an IBM MVS environment. To \$48,000.

Software Engineer — A.I. Start-Up Opportunities (341-10) Many positions open for experienced Software Engineers with backgrounds in customer support, knowledge engineering, UNIX internals, LISP or PROLOG, compiler development. Silicon Valley location. To \$100,000.

Senior Programmer/Analyst — IIP 3000 (341-12) Consulting division of major worldwide corporation seeks individuals with application development experience using COBOL in an HP 3000 environment. Strong promotional opportunities for those willing to assume additional responsibilities. Silicon Valley. To \$38,000.

Programmer/Analyst — Management and CICS Training (331-01) Rapidly expanding San Francisco data processing organization seeks a professional with at least two years of IBM OS/COBOL and VSAM experience to work on information systems. Excellent opportunities for advancement. To \$40,000.

Programmer/Analyst — Long-Term Growth Position (331-04) Major San Francisco manufacturer seeks aggressive, results-oriented individual with two years System 34 or 36, RPG II experience. New system development project offers skill enhancement and promotion potential. To \$42,000.

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Systems Programmer — Communications, MVS, IMS (331-10) Leading San Francisco computer manufacturer seeks Systems Programmers with a minimum of two years in installation, troubleshooting, and product support of network systems. VTAM, SNA, MVS, IMS, and VM/CMS. Must have experience in multiple major system products support. To \$48,000.

OREGON

Software Engineers — Hi-tech Start-up (311-01) Portland based high-tech software firm developing application specific software for Array Processors. Multiple opportunities in Signal/Image/Seismic processing, Cat/Medical imaging, CAD/CAE simulations, ASW; etc. Requires solid background in mathematics with FORTRAN or Assembler. To \$45,000.

Programmer/Analysts — New Development (311-02) High-growth Portland manufacturing firm has just begun a large new development effort to install fully integrated Manufacturing and Financial applications. Seek professionals with two or more years in applications development with solid skills in CICS, ADDS/O, IDMS structured programming and COBOL. Excellent growth potential. To \$36,000.

Data Base Architect — Relational Data Base (311-03) Extremely progressive Portland firm seeks a Data Base Technical Professional for an exciting research and development project. Lead the implementation of a relational data base and data base machine. Requires a strong technical background in relational data bases such as DB2, ORACLE, INFORMIX or SEQUEL, and knowledge of data modeling, normalizing, and data views. Excellent technical career opportunity. High visibility. To \$50,000.

Programmer/Analysts — Minicomputers (311-05) Expanding software house has recently created multiple opportunities for Programmer/Analysts with solid backgrounds in BASIC language and the PICK operating system. Develop new on-line applications for Order Entry, Manufacturing, Inventory and Financial applications. Excellent career growth potential to lead positions, management or technical areas. Very progressive and creative environment. Portland. To \$35,000.

Applications Engineer — UNIX O/S (311-06) Well-established hi-tech company for OEM market manufacturing a 32-bit multi-board computer seeks experienced and innovative individuals to develop operating system, drivers, utilities, etc. Campus atmosphere in a hi-tech park allows individuals to work in a creative atmosphere. Requires knowledge of C and UNIX internals. Portland. To \$50,000.

Systems Analysts — Growth to Management (311-08) Utilize your strong verbal and written skills as well as structured design techniques to lead special projects in a pure Analyst role for this well-established Portland company. Initially you will be involved in the

conversion of manufacturing systems from DEC 20's to IBM 30XX under MVS. Requires four to six years of solid background as P/A and S/A in COBOL with one year experience in CICS. Data base experience is very helpful. To \$36,000.

Software Engineers — Graphics (311-09) Four year old rapidly growing hi-tech firm specializing in software and firmware for graphics applications has recently created new, exciting career positions for Software Engineers. Positions exist in graphics applications, data base applications, firmware development, and quality assurance. Requires experience with C, UNIX, Graphics Applications or Graphics Kernel. Portland. To \$40,000 plus stock.

Senior Programmer/Analyst — CICS (311-10) Rapidly expanding, well-established firm headquartered in Portland seeks professionals for the design and development of applications to support a variety of applications including distribution, inventory and Financial in an on-line, large scale IBM environment. Require minimum two years of structured COBOL and one year of CICS experience. Prior experience with DB2 would be a real plus. Firm offers exciting career potential. To \$38,000.

WASHINGTON

Data Base/Analyst (301-01) Seattle office of well-established manufacturing firm is expanding its staff to add to the company's data base administration. Successful candidate will possess expertise in a major data base management system such as IMS, TOTAL or IDMS. To \$42,000.

Micro Systems Software — Industry Leader (301-03) Rapidly growing Seattle based software development organization has several openings for Micro Systems Software Specialists. Position involves design and development of leading edge products such as compilers and operating systems for major microcomputers. To \$40,000.

Systems Programmer (301-07) Expanding Northwest firm offers state-of-the-art exposure to an experienced IBM OS Systems Programmer. The successful candidate will join the state industry leader while enjoying the unique advantages of the Pacific Northwest. CICS, MVS/JES systems, internals desirable. To \$45,000.

Programmer/Analyst — On-line Development (301-08) Major Seattle firm is offering the opportunity for solid IBM OS/COBOL Programmers to learn both CICS and IMS/DC. Minimum of two years experience is required. Relocation assistance. To \$35,000.

Telecommunications Systems Programmers (301-09) Large manufacturing firm located in the Pacific Northwest has multiple opportunities in IBM communications systems. Develop, implement, and design networks. IBM ACF/NCP, VTAM/NCP, BTAM, SNA experience helpful. To \$50,000.

Software Engineers — CAD/CAM/CAE (301-12) Highly successful suburban Seattle based company, which develops manufacturing/engineering software products, has multiple openings. Background in CAD/CAM/CAE, CADAM, CATIA, or CAEDS desired with FORTRAN, C or PASCAL IBM mainframes. To \$40,000.

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COMPUTER INDUSTRY

U.S. high-tech group decries looming Canadian trade war

By Mitch Betts

WASHINGTON, D.C. — The Computer and Business Equipment Manufacturers Association (CBEMA) last week issued a statement deploring the emerging trade war between the U.S. and Canada, which has begun to affect U.S. exports of computer parts to Canada.

In retaliation against a U.S. government decision to raise tariffs on Canadian cedar shingles, the Canadian government announced it will reimpose tariffs on U.S. computer parts and semiconductors and impose tariffs on U.S. publications.

The Canadian tariff will be 3.9% for computer parts and 6.8% for semiconductors.

Canada is the leading export market for U.S. computer manufacturers, buying 15.3% of all U.S. computer exports. Just six months ago, the U.S., Canada and Japan eliminated tariffs on computer parts and semiconductors, a move that CBEMA vigorously

supported [CW, Dec. 2].

"We can only deplore the protectionist pressures that have led to the current raising of tariff barriers between the U.S. and Canada," said Vico E. Henriques, CBEMA president, in a statement last week.

"This sort of trade war skirmish, which ends up harming everyone, is precisely what we have been warning against as fever has grown for protectionist trade legislation in recent months," Henriques said. "Once cross-sectoral retaliation gets started, there's no end to the jobs that can be lost and the industries harmed," he added.

On another trade matter, CBEMA urged the Reagan administration to terminate special trade benefits given to Indonesia, on the grounds that Indonesia has inadequate copyright laws. U.S. firms lose an estimated \$206 million a year from Indonesian piracy, including \$3 million a year in losses from software piracy.

INDUSTRY NOTES

DEC acquires Trilogy division

Making another investment in the firm in which it lost \$26 million in 1983, **Digital Equipment Corp.** last week announced it would pay \$10 million for **Trilogy Ltd.**'s technology group. The group is responsible for development of new semiconductor packaging techniques.

DEC was one of the original investors in Trilogy's ill-fated wafer-scale integration research project, with **Sperry Corp.**, **Control Data Corp.** and the joint venture unit of **Honeywell, Inc.** and **Groupe Bull**.

Comdisco, Inc. expanded its Far East leasing business, forming a joint marketing venture with six Japanese computer leasing firms under the name **Nihon Comdisco K.K.** Three of the Japanese firms are also affiliated with three of Japan's five largest banks.

Prior to going public in the U.S., **Borland International** plans to list its stock on the London Stock Exchange. Borland founder Phillippe Kahn said last week that he has chosen the UK's Unlisted Securities Market (USM) for his company's debut.

The USM is regarded as a less expensive, preliminary step toward a full public listing on the London Ex-

change. Kahn said a full listing will follow and admitted that a U.S. offering was "a strong possibility." Scotts Valley, Calif.-based **Borland's** move is expected to net approximately \$100 million.

Facing probable acquisition by **Citicorp**, **Quotron Systems, Inc.** made an acquisition of its own. The stock quotation services vendor purchased **Securities Industry Software Corp.**, an Evergreen, Colo.-based vendor of on-line order management, brokerage accounting and other services for the financial industry. Terms were not disclosed, and Quotron said the move was not related to Citicorp's pending tender offer.

The ongoing saga of the future ownership of **Computerland Corp.** took an unexpected twist last week when founder and owner William Millard announced that his 96% share of the company, valued at \$200 million to \$400 million, is for sale. The proposed sale appears to be subject to court approval, because investor group **Micro/Vest** was awarded 20% of Millard's Computerland stake in last year's highly publicized court decision, which Millard has appealed.

O'Dowd and Vice-President of Manufacturing James Brayne had resigned in support of Christo and Lucier.

The Qantel management dispute came as a surprise to Bruce Anderson, a partner in one of the venture capital firms that negotiated the purchase of the five MDS units with Tutino. "They seemed to get along quite well in all our conversations," said Anderson. "Something must have happened subsequent to our transactions, or else they camouflaged it very well."

Wall Street split on future of Sperry, Burroughs stocks



ACTIVE ISSUES

Kathy Porteus

"Should I hold my Sperry shares or take the money and run?"

Such is the choice Sperry Corp. shareholders have faced since Sperry (SY — 74%) accepted Burroughs Corp.'s (BGH — 59%) takeover offer two weeks ago. The merger calls for Burroughs to purchase about 54% of Sperry's shares outstanding on a fully diluted basis for \$76.50 in cash and pay \$76.50 in newly issued Burroughs preferred stock and convertible debentures for each remaining share.

If investors sell their Sperry shares now, they receive the stock's current value in cash, minus commissions. If investors decide to tender their shares to Burroughs, most likely they will receive half cash and half new Burroughs securities totaling a value of \$76.50 per Sperry share.

Many Wall Street firms such as E. F. Hutton & Co., Bear Stearns & Co., Eberstadt Fleming & Co. and Dean Witter Reynolds, Inc. recommend investors take their profits from Sperry, now trading 35% above price levels before Burroughs' takeover.

According to Louis Giglio, a consultant with Bear Stearns, the reason behind his firm's recommendation to sell is skepticism concerning what will happen to the value of Burroughs' new stock once it is issued and begins trading.

"I would rather have \$75 cash in my hand than tender my shares to Burroughs and stand the chance of receiving \$37.50 in cash and a volatile equivalent in this new piece of paper," Giglio says.

Michael Geran, mainframe ana-

lyst with E. F. Hutton, says he recommends sale of Sperry because "it is fundamentally valued." Most analysts argue that the money in a Sperry share could be more effectively put to work somewhere else.

Such analysts remain neutral on Burroughs, preferring to wait until the smoke clears before recommending any action on the stock. However, Jonathan Fram, analyst with Bear Stearns, recommends sale of Burroughs because he estimates 1987 earnings of the combined company to be under \$5.00 a share, much lower than the \$8.00 a share predicted by Burroughs Chairman W. Michael Blumenthal.

1987 earnings of the combined company will depend on how effectively Burroughs absorbs Sperry in the next 18 months. Blumenthal expects the merger to result in cost savings of \$150 million next year.

Analysts cite administrative support, manufacturing, marketing and research and development as fertile areas for cost cutting. According to Don Young, research analyst with Sanford C. Bernstein & Co., cutting R&D costs, currently totaling \$675 million, by 11% (a figure used by Burroughs) translates into a "sizeable impact on the bottom line."

Young and William Easterbrook, vice-president with Kidder, Peabody & Co., are among the few analysts currently bullish on Sperry and Burroughs. Both analysts recommend holding Sperry shares to obtain the combination of cash and Burroughs securities. Both also recommend purchase of Burroughs.

According to Young, there will be some short-term damage to Burroughs results as the company faces a confused Sperry customer base and substantial reorganization and cost-restructuring challenges. "But long term, I think this move by Burroughs will add value to shareholders," Young says.

Easterbrook estimates the combined company will earn \$6.00 a share in 1987 and between \$7.00 and \$8.00 a share in 1988. "If this is the scenario 18 months from now," Easterbrook says, "the stock will be trading closer to \$90 or \$100."

Porteus is president of Strand Research Associates, a Centerville, Mass.-based company that provides customized research services for financial and high-tech firms.

Molecular closes U.S. operations

SAN JOSE, Calif. — Multiuser micro vendor **Molecular Computer, Inc.** has closed its U.S. operations and laid off all 70 of its workers. Company President Frank Zurcher last week said the company plans to file for protection from its creditors under Chapter 11 of the Federal Bankruptcy Code.

Molecular manufactured multiuser microcomputers and local-area networks (LAN). Founded in 1981, the company's annual sales reached as high as \$30 million and dropped to about \$24 million this year.

According to Zurcher, Molecular has produced a high-speed 100M bit/sec. LAN, but debts prevented the company from bringing it to market.

"The basic issue is that every time we tried to do something, we had to do it with a lot of debt," he said.

The Chapter 11 petition lists \$14 million in liabilities and \$10 million in assets. Molecular has about 500 creditors, Zurcher said.

"The problem is when you're carrying a heavy load, you just keep fighting an uphill battle. If the only problem we had was to compete in the LAN market, that in itself would have been tough," he noted.

Zurcher claimed Molecular is prepared to present a "skeleton" reorganization plan to creditors, but a court-approved reorganization could take months.

— Maura McEnaney

Power struggle at MDS Qantel

From page 164

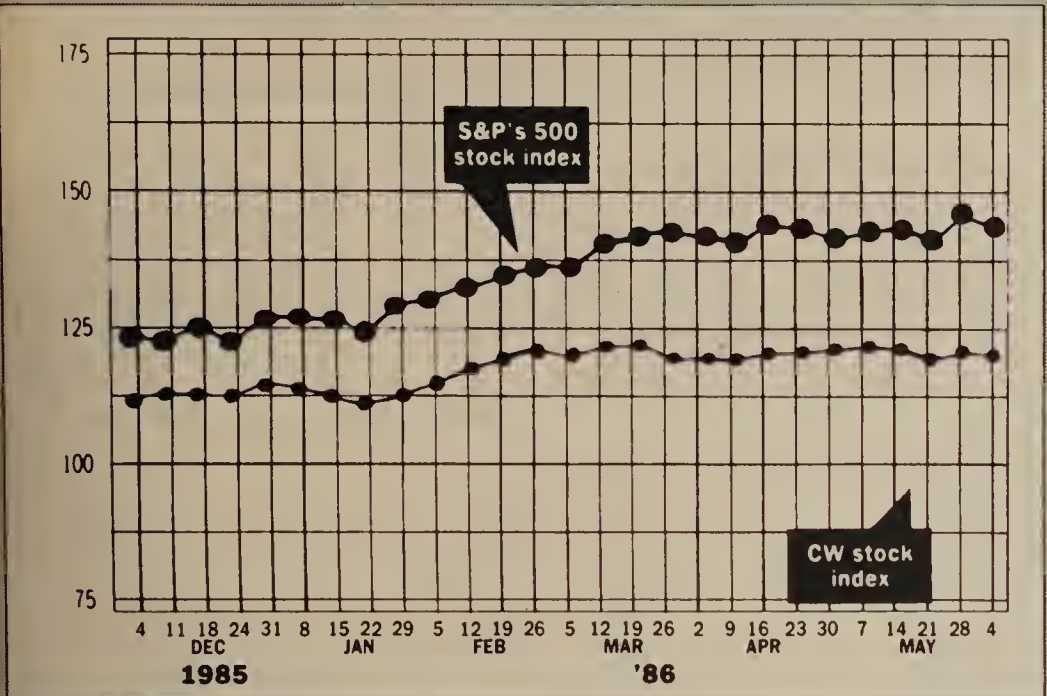
stantial cash compensation. "I don't believe in golden parachutes," Christo said. Tutino said the details of the dispute were "an internal matter."

Tutino denied Christo's assertion that Chief Financial Officer Joseph

COMPUTER INDUSTRY

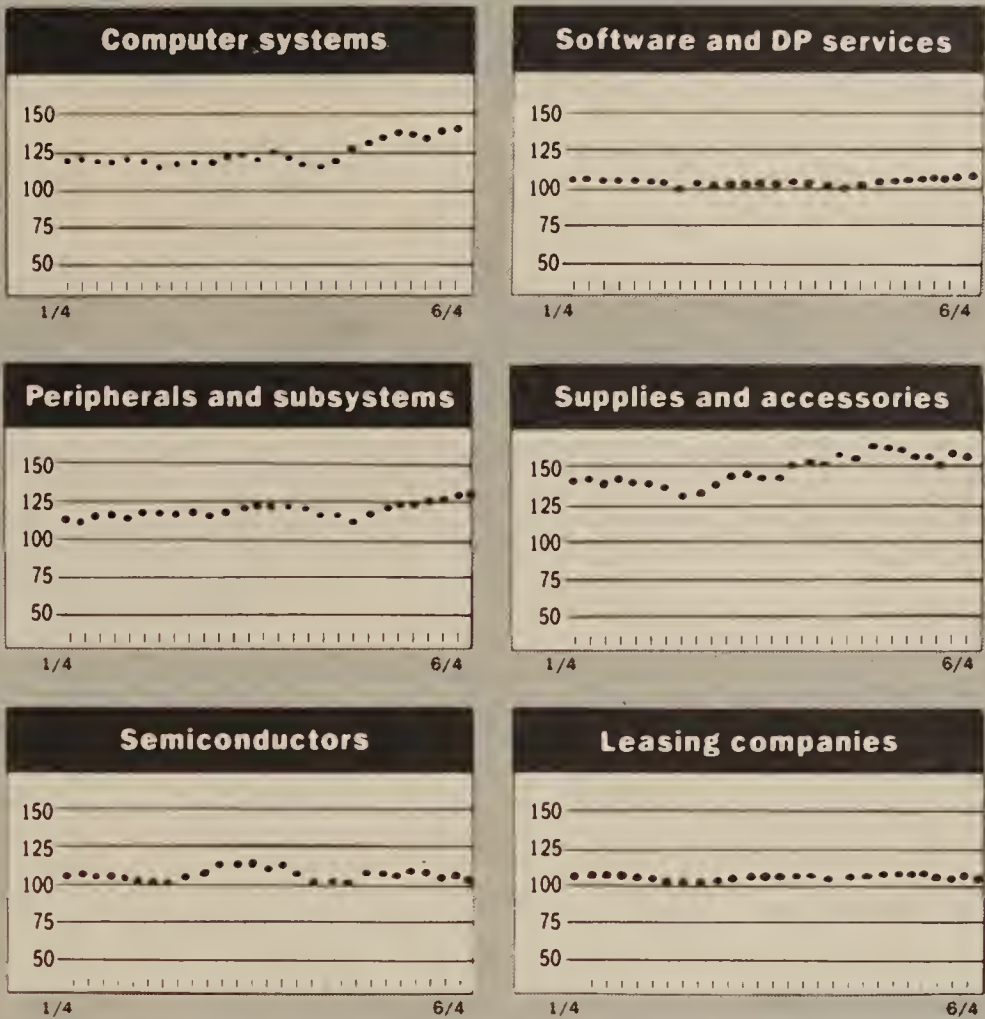
MITCHELL J. HAYES

Computerworld stock trading index



All indexes reflect a historical base of 100 on Dec. 31, 1984, and trace stock market performance in relation to that base. The CW stock index represents the unweighted average performance of the six categories of computer industry stocks.

	5/28/86	6/4/86
Computer systems	130.5	130.9
Software and DP services	106.4	106.7
Peripherals and subsystems	126.4	126.4
Supplies and accessories	155.8	154.9
Semiconductors	106.4	103.2
Leasing companies	104.6	103.8
CW stock index	121.3	120.6
Standard and Poor's 500 stock index	147.5	145.9



Computerworld stock trading summary

CLOSING PRICES WEDNESDAY, JUNE 4, 1986

X C H		52-WEEK RANGE (1)	PRICE		WEEK NET CHNGE	WEEK PCT CHNGE
			CLOSE JUNE 4 1986			
	COMPUTER SYSTEMS					
O	ALPHA MICROSYSTEMS	5- 9	6 1/2	-1/4	-3.7	
O	ALTOS COMPUTER SYST	9- 19	16 1/8	0	0.0	
A	AMDAHL CORP	10- 18	17 1/8	+1 3/8	+8.7	
O	APOLLO COMPUTER	9- 31	14 1/2	-3/4	-4.9	
O	APPLE COMPUTER INC	14- 39	38 3/4	+1 1/2	+4.0	
N	AT&T	19- 28	24 1/2	-5/8	-2.4	
N	BURROUGHS CORP	52- 71	58 3/8	-1/4	-0.4	
O	COMPAQ COMPUTER CP	5- 18	16 1/2	-3/4	-4.3	
O	COMPUTER AUTOMATION	1- 9	3 1/4	+1/8	+4.0	
A	COMPUTER CONSOLES	5- 14	11 1/8	+3/8	+3.4	
N	CONTROL DATA CORP	15- 39	25 1/2	-3/8	-1.4	
O	CONVERGENT TECHNOL	5- 13	8 1/2	-1 1/2	-15.0	
O	CPT CORP	4- 8	4 1/2	+1/8	+2.8	
N	CRAY RESEARCH INC	25- 94	93 1/2	+4 3/8	+4.9	
O	DAISY SYSTEMS CORP	11- 38	12	0	0.0	
N	DATA GENERAL CORP	31- 76	40 1/8	+1	+2.5	
N	DATAPoint CORP	5- 22	8 1/2	+5/8	+7.9	
N	DIGITAL EQUIPMENT	42- 91	89 3/4	-1/4	-0.2	
A	ECCO INC	13- 20	19 5/8	+3/4	+3.9	
N	ELECTRONIC ASSOC.	3- 7	5 5/8	-1/4	-4.2	
N	FLOATING POINT SYST	18- 42	37 3/8	+1/8	+0.3	
N	FOXBORO	22- 31	30 1/2	-1/4	-0.8	
N	GOULD INC	20- 38	23	-1/4	-1.0	
N	HARRIS CORP	22- 35	31 1/2	-3/4	-2.3	
N	HEWLETT-PACKARD CO	29- 46	43 7/8	-2 1/4	-4.8	
N	HONEYWELL INC	54- 87	78 1/8	+7/8	+1.1	
N	IBM	117- 158	150	-1 3/8	-0.9	
O	IPL SYSTEMS INC	1- 4	3	0	0.0	
N	ITT CORP	28- 48	46 3/4	-1 5/8	-3.3	
N	M/A-COM INC	13- 24	16	-7/8	-5.1	
N	MANAGEMENT ASSIST	2- 28	2 1/2	+1/8	+5.2	
N	MATSUSHITA ELEC(ADR)	49- 98	88 3/8	-5/8	-0.7	
O	MENTOR GRAPHICS	13- 30	17 7/8	+1 3/8	+8.3	
O	MODULAR COMPUTER SYS	6- 9	8 7/8	0	0.0	
N	MOHAWK DATA SCI	1- 13	3 1/8	0	0.0	
N	NBI INC	11- 20	11 1/2	0	0.0	
N	NCR	25- 56	56	+1 1/8	+2.0	
N	PERKIN-ELMER	22- 36	29 1/4	-3/4	-2.5	
N	PRIME COMPUTER INC	15- 27	19 3/4	-3/8	-1.8	
N	SPERRY CORP	39- 75	74 3/4	+1/8	+0.1	
O	STRATUS COMPUTER INC	9- 25	23 1/2	+1 3/4	+8.0	
O	TANDEM COMPUTERS INC	13- 34	33 1/2	+2 5/8	+8.5	
N	TANDEM CORP	24- 44	41 1/2	-5/8	-1.4	
O	TELEVIDEO SYSTEMS	2- 4	3 1/4	-1/4	-7.1	
O	TELXON CORP	6- 23	23	+1 7/8	+8.8	
N	TEXAS INSTRUMENTS	86- 141	135 1/2	+7/8	+0.6	
A	ULTIMATE CORP	8- 34	31 7/8	-2 3/8	-6.9	
O	VECTOR GRAPHICS INC	1- 1	1/8	0	0.0	
A	WANG LABS "B"	15- 29	17 1/8	+5/8	+3.7	
A	WANG LABS "C"	15- 29	17 1/4	+3/8	+2.2	
N	XEROX CORP	37- 72	58 5/8	-3	-4.8	

SUPPLIES & ACCESSORIES

N	AMERICAN BUS PRODS	21- 36	33	0	0.0
N	BARRY WRIGHT	17- 29	23 3/4	+1/8	+0.5
A	DUPLIX PRODUCTS INC	13- 22	21 1/2	-1/4	-1.1
N	ENNIS BUS. FORMS	14- 28	25 1/8	+1/4	+1.0
N	3M COMPANY	74- 107	105 3/8	-1/8	-0.1
N	MOORE CORP LTO	15- 27	25	-1	-3.8
O	STANDARD REGISTER	22- 45	39 3/4	+1/4	+0.6
N	WALLACE COMP SERVICE	30- 49	48 1/8	-7/8	-1.7

X C H		52-WEEK RANGE (1)	PRICE		WEEK NET CHNGE	WEEK PCT CHNGE
			CLOSE JUNE 4 1986			
	SOFTWARE AND DP SERVICES					
O	ADVANCED COMP TECH	2- 6	6		-1/4	-4.0
N	ADVANCED SYSTEMS INC	9- 20	17 5/8		+1/8	+0.7
N	AGS COMPUTERS INC	10- 25	20 3/8		-1 1/8	-5.2
O	AMERICAN SOFTWARE	9- 15	12		-3/8	-3.0
N	ANACOMP INC	2- 6	5 3/8		-1/2	-8.5
O	ANALYSTS INTL CORP	5- 11	7 1/4		-1/4	-3.3
O	ASHTON TATE	6- 34	33 5/8		+2 1/4	+7.1
O	ASK COMPUTER SYSTEMS	7- 25	13		+7/8	+7.2
8	ASTRADYNE COMP IND	1- 3	1 5/8		0	0.0
N	AUTOMATIC DATA PROC	35- 77	73		-3 5/8	-4.7
O	COMPUTER NETWORK	5- 9	7 5/8		-1/8	-1.6
O	COMPUTER ASSOC INT'L	9- 25	24 3/4		+1	+4.2
O	COMPUTER HORIZONS	5- 11	13 7/8		0	0.0
N	COMPUTER SCIENCES	13- 38	36 7/8		-5/8	-1.6
O	COMPUTER TASK GROUP	7- 19	18 1/4		+1	+5.8
O	COMPUTER USAGE	1- 3	2 3/4		-1/4	-8.3
O	COMPUTONE SYSTEMS	3- 11	3 5/8		-5/8	-14.7
O	COMSERV CORP	1- 6	3 1/2		+1/4	+7.6
O	COMSHARE	7- 13	13 1/8		0	0.0
N	CULLINET SOFTWARE	12- 33	15 7/8		-3/8	-2.3
O	CYCLARE SYSTEMS INC	13- 27	17		+1/4	+1.4
N	HOGAN SYSTEM INC	4- 12	11 1/2		+1 3/4	+13.5
N	GENERAL ELECTRIC CO	56- 81	81 1/4		+1/4	+0.3
N	GENL MOTORS E (EOS)	20- 49	48 1/2		+3/8	+0.7
N	GTE CORP	38- 54	49 1/4		-1 1/8	-2.2
O	INFORMATION SCIENCE	1- 5	3 1/4		-1/8	-3.7
O	INFOTRON SYSTEMS CP	13- 24	16 1/2		0	0.0
O	KEANE ASSOCIATES	10- 20	13 1/2		-1/2	-3.5
N	LOGICON	25- 43	35 7/8		-2	-5.2
O	LOTUS DEVELOPMENT CP	15- 38	38 1/4		+1 3/4	+4.7
O	MCI COMMUNICATIONS	7- 13	9 1/4		-1/2	-5.1
O	MNGT SCI AMER INC	7- 16	16		+1/4	+1.5
O	MATHEMATICAL APP GRP	1- 8	1/2		0	0.0
O	MICOM SYSTEMS INC	12- 35	13		-1 3/4	-11.8
O	MICROPRO INT'L CP	2- 4	2 3/8		-1/8	-7.3
O	NATIONAL DATA CORP	8- 25	23		+1 3/4	+8.2
O	ON-LINE SOFTWARE INT	4- 16	15 1/2		-1/2	-3.1
N	PANSOPHIC SYSTEMS	14- 35	35 1/4		+1	+2.9
N	PLANNING RESEARCH	11- 23	20		-1 3/8	-6.4
O	POLICY MGMT SYSTS CP	16- 35	20 1/4		0	0.0
O	PROGRAMMING & SYS	4- 10	9 1/2		+3/4	+8.5
O	REYNOLDS & REYNOLD	30- 65	34 1/2		+3 1/4	+10.3
O	SEI CORP	13- 27	22 1/2		-1	-4.2
O	SHARED MEDICAL SYST	26- 38	35 1/4		-3/8	-1.0
O	SCIENTIFIC COMPUTERS	4- 8	4 3/4		0	0.0
O	SOFTWARE AG	12- 22	19 3/4		-1/4	-1.2
N	URS CORP	10- 18	16 7/8		+1/4	+1.5
N	UCCEL	11- 23	22 3/4		+1 3/8	+6.4
O	VM SOFTWARE	17- 31	31 1/4		+1 3/4	+5.9

SEMICONDUCTORS

N	ADVANCED MICRO OEV	22- 36	24 5/8	-1 3/8	-5.2
O	ADV'D SEMICONDUCTOR	7- 23	11	-1/4	-2.2
N	ANALOG DEVICES INC	14- 24	20 1/2	-2 3/8	-10.3
O	ANALOGIC CORP	11- 16	12 3/4	+3/8	+3.0
N	APPLIED MAGNETICS CP	9- 19	18 1/2	-3/8	-1.9
O	AVANTEK	18- 26	19 1/4	-1/8	-0.6
O	HADCO CORP	3- 7	5	-1/2	-9.0
O	INTEL CORP	21- 33	26 1/4	+1/4	+0.9
O	MICRO MASK INC	5- 12	5	-3/8	-6.9
N	MOTOROLA INC	29- 48	45 3/4	-3/4	-1.6
N	NAT'L SEMICONDUCTOR	10- 15	13 1/2	-7/8	-6.0
N	TERAAYNE	17- 33	26 3/4	+1	+3.8

EXCH		PRICE				
		52-WEEK RANGE		CLOSE	WEEK NET	WEEK PCT
		(1)		JUNE 4 1986	CHNGE	CHNGE
PERIPHERALS & SUBSYSTEMS						
P	AM INTERNATIONAL	3-	8	8	-3/8	-4.4
A	ANDERSON JACOBSON	2-	5	2 1/4	0	0.0
O	AST RESEARCH INC	7-	33	15 1/2	-1/4	-1.5
O	AUTO-TROL TECHNOLOGY	3-	13	4 3/8	0	0.0
O	AVANT-GARDE COMPUTING	3-	21	4 1/4	+1/8	+3.0
O	BANCTEC INC	6-	13	12 1/2	0	0.0
O	BEEHIVE INT'L	1-	2	1/8	0	0.0
N	BOLT, BERANEK & NEW	20-	47	47 3/8	+3/8	+0.7
O	CAM8EX CORP	1-	3	1 1/4	-1/4	-16.6
N	CENTRONICS DATA COMP	3-	11	7 1/8	+5/8	+9.6
A	CETEC CORP	6-	9	7 1/8	+1/4	+3.6
A	COGNITRONICS	4-	7	4 1/8	-1/2	-10.8
N	COMPUGRAPHIC CORP	23-	36	23 3/4	0	0.0
O	COMPUTER TRANSCIVER	0-	1	3/4	-1/8	-13.3
N	COMPUTERVISION CORP	9-	44	16 5/8	-1 1/4	-6.9
N	CONRAC CORP	12-	18	16 3/4	-3/4	-4.2
A	DATAPRODUCTS CORP	11-	20	17 1/2	+1/4	+1.4
A	DATAWARE CORP	4-	17	14 5/8	-2 1/4	-13.3
O	DATA SWITCH CORP	4-	9	7 3/8	+1/8	+1.7
O	DATUM INC	5-	9	6 1/2	-1/4	-3.7
O	DECISION INFO CORP	10-	20	14 1/2	+1 5/8	+12.6
O	ENDATA, INC	2-	8	6 1/4	0	0.0
O	EVANS & SUTHERLAND	12-	27	25 3/8	-3/4	-2.8
O	GANDALF TECHNOLOGIES	5-	13	6 3/8	-1/4	-3.7
N	GEN'L DATA COMM IND	8-	21	13 7/8	+1/2	+3.7
N	HAZELTINE CORP	17-	30	17 1/2	+1/2	+2.9
O	ICOT CORP	3-	12	11 3/4	-1/4	-2.0
O	INFORMATION INTL INC	10-	17	15 1/8	-3/8	-2.4
O	INTECOM INC	3-	11	5 5/8	+1/16	+1.1
O	MEGAOATA CORP	3-	8	3 3/8	+1/4	+8.0
A	MSI OATA CORP	7-	14	13 7/8	0	0.0
N	NASHUA CORP	24-	53	53	+1/4	+0.4
O	NETWORK SYSTEMS CORP	11-	27	14	+1/8	+0.9
N	NO AMERICAN PHILIPS	32-	47	44	+2 1/4	+5.3
N	NORTHERN TELECOM LTD	26-	41	29	-7/8	-2.9
O	OMEX	1-	3	3/8	+1/8	+50.0
N	PARADYNE CORP	6-	18	10 1/4	-3/4	-6.8
A	PENRIL CORP	7-	14	7 3/8	0	0.0
N	PLESSEY CO (AOR)	19-	38	32	-2 1/2	-7.2
O	PRINTRONIX INC	9-	18	13 1/4	+1/8	+0.9
O	QMS INC	6-	16	13 7/8	+1/8	+0.9
O	RAMTEK CORP	2-	7	5 5/8	0	0.0
N	RECOGNITION EQUIP	9-	17	13	-3	-18.7
N	SANDERS ASSOCIATES	29-	44	28 3/4	-7/8	-2.9
O	SCAN-TRON CORP	9-	22	21 1/2	+1 3/4	+8.8
N	SCIENTIFIC ATLANTA	10-	15	10 7/8	+1/2	+4.8
O	SEAGATE TECHNOLOGY	5-	13	12 7/8	+1/8	+0.9
N	STORAGE TECHNOLOGY	1-	5	4	-1/8	-3.0
O	SYKES DATATRONICS	0-	2	1/8	0	0.0
A	T 8AR INC	5-	9	5 7/8	0	0.0
A	TAB PRODUCTS CO	9-	15	14	-1/8	-0.8
O	TANOON CORP	3-	9	6 3/4	-3/8	-5.2
A	TEC INC	5-	13	5 1/4	-1/8	-2.3
N	TEKTRONIX INC	47-	68	59 1/4	-2 7/8	-4.6
N	TELEX	34-	68	64 1/8	+2	+3.2
O	TESDATA SYSTEMS CP	0-	3	5/8	0	0.0
N	TIMEPLEX INC	15-	23	17 1/2	-7/8	-4.7
N	TITAN CORP	4-	11	9 1/2	-1/2	-5.0
O	VISUAL TECHNOLOGY	1-	3	1/2	-1/8	-20.0

COMPUTER INDUSTRY

INSIDE

Word Perfect Corp. tries to stay low-key in the fast lane of micro word processing software/**130**

Hitachi and other Japanese vendors report their first profit declines in several years/**136**

Computer leasing firms are finding a hot market in telecom equipment/**138**

Burroughs, Sperry shareholders face a dilemma/**162**

INSTANT ANALYSIS

"We certainly feel that every regional holding company should own a software vendor."

— Curt A. Monash, Paine Webber, Inc., on the postdivestiture telephone companies

Power struggle at the top

MDS Qantel directors leave in bitter dispute over control

By Clinton Wilder

HAYWARD, Calif. — Barely one month after solving its debt problems and establishing a new corporate direction [CW, May 26], MDS Qantel is in turmoil again.

Two members of MDS Qantel's three-man board of directors, Thomas K. Christo and Francis P. Lucier, left the minicomputer company last week after a bitter management dispute with Chairman and Chief Executive Officer Matthew E. Tutino. Christo, the controversial attorney who won several user and distributor lawsuits against computer vendors, said he and Lucier plan to seek court action to force Tutino out of the company's operations.

"I'm afraid I'm going back to court; it sure looks that way," said Christo, who was MDS Qantel's president and chief operating officer. "We are going to ask for injunctive relief to force him to accept the board that the shareholders elected."

Christo and Lucier have denied that they formally resigned from the board, as Tutino claims. "Their seats are being filled, and a new board will be announced short-

ly," Tutino said. "We are looking for a new president and chief operating officer."

Tutino said last week's management split "doesn't impact customers at all," but it appears to set up a protracted battle for control of MDS Qantel at a highly inopportune time. Qantel appeared to be rebounding from more than two years of financial and organizational headaches as the computer systems division of Mohawk Data Sciences Corp.

Last month, Mohawk removed some \$100 million of debt and negotiated a significant bank credit line by selling five other divisions to two New York venture capital firms, which reorganized the units into Momentum Technologies, Inc. [CW, May 12].

Christo and Tutino gave markedly different versions of the management rift, but the dispute appeared to center on the operational roles of the two men. Christo claimed Tutino refused to give up a day-to-day role that he was not intended to have, while Tutino said Christo's post as president and chief operating officer was intended to be temporary until a replacement was found.

Christo also claimed Tutino refused to relinquish the CEO position without sub-

See **POWER** page 162

CBEMA: Trade bill news mixed

By Mitch Betts

WASHINGTON, D.C. — The omnibus trade bill passed last month by the U.S. House of Representatives has both good and bad features for the computer industry, according to Bill Maxwell, director of international issues for the Computer and Business Equipment Manufacturers Association (CBEMA).

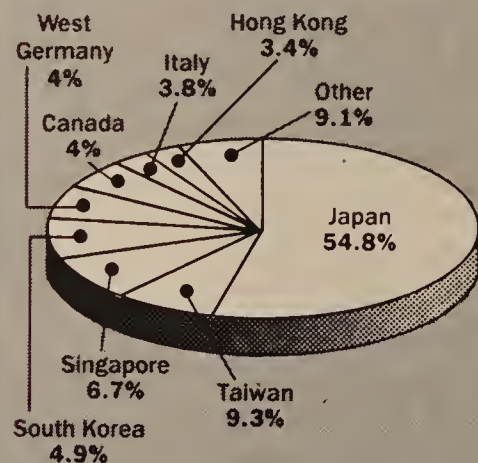
Separately, the industry association released statistics showing that the U.S. balance of trade in computers and telecommunications equipment worsened in early 1986.

Maxwell said CBEMA is adamantly opposed to the so-called Gephardt amendment to the House bill, which would require U.S. retaliation against countries that have excessive trade surpluses, with the U.S. unless the surplus is reduced 10% a year. Specifically, it would affect Japan,

See **CBEMA** page 135

DATA VIEW

Computer imports: Japan still dominates



Figures indicate percent of total first-quarter 1986 computer and business equipment industry imports into the U.S. by country of origin.

Information from Computer and Business Equipment Manufacturers Association's industry marketing statistics.



INDUSTRY INSIGHT
Clinton Wilder

Can a shotgun wedding work?

Sperry Corp. Or simply the Blumenthal Corp.

Whatever name the collective minds of Detroit and Blue Bell, Pa., come up with for the industry's new No. 2, the question is always the same. Will the shotgun marriage of Burroughs Corp. and Sperry Corp. really work?

A lot of people don't think so. They see two giants with incompatible product lines, overlap rather than synergy and little telecommunications capability in a market crying out for connectivity.

Despite what Burroughs Chairman W. Michael Blumenthal says, the industry's best hope of keeping IBM honest still appears to lie with Digital Equipment Corp.

Burroughs' bold move to reshape the mainframe computer industry, interestingly, comes at a time when BUNCH companies NCR Corp. and Honeywell, Inc. are seeking to de-emphasize traditional mainframe applications and forge ahead in transaction processing and office automation, respectively.

And as most of the world knows by now, NCR and Honeywell both turned down the choice of playing white knight for Sperry. The unattractive finances of such a scenario, however, were at least as negative a factor as NCR's and Honeywell's choice not to follow the Blumenthal theory of bigger is better.

Bigger, of course, is a relative term. According to market research firm Infocorp, Burroughs and Sperry combined were responsible for 12.6% of the worldwide market for systems priced higher than \$350,000 in 1985. The other company, with the blue logo, sold 62.6% of them.

Despite the work force consolida-

See **CAN** page 135

Wilder is Computerworld's senior editor, computer industry.

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mation system—including mainframe applications and other PC software.

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*Independent research has confirmed KEY/MASTER the leading data entry software system for IBM mainframes; KEY/MASTER has outsold its largest competitor by almost two to one.

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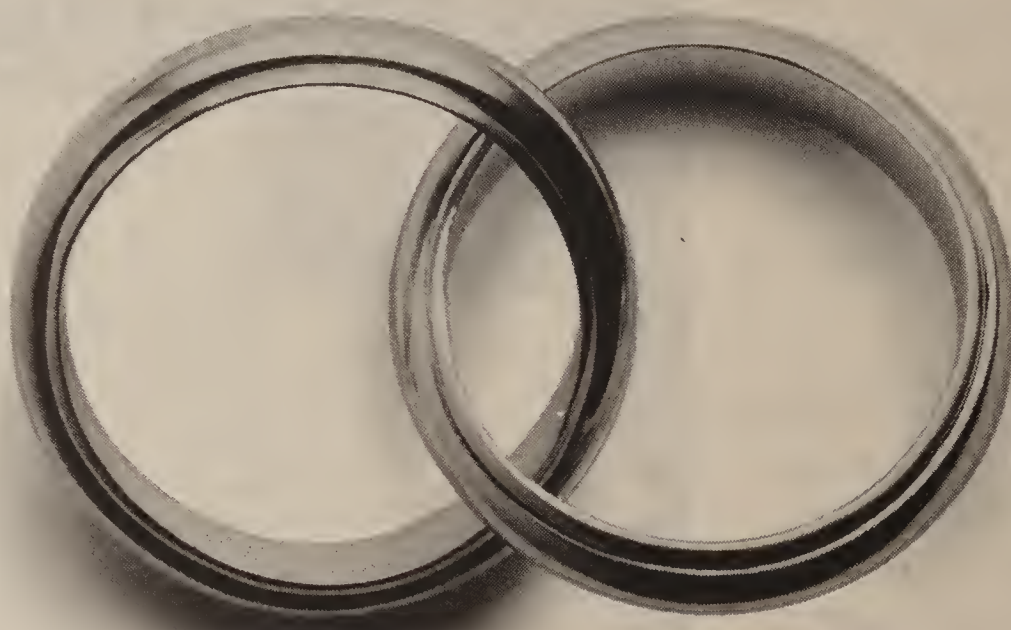


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